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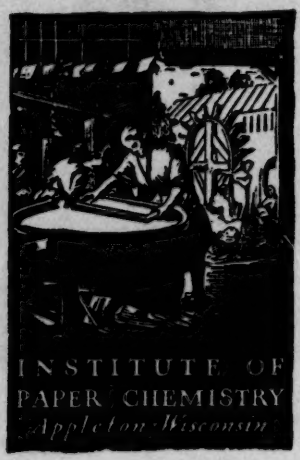
BULLETIN

OF

THE INSTITUTE OF PAPER CHEMISTRY



AFFILIATED WITH

LAWRENCE COLLEGE

APPLETON, WISCONSIN

LIBRARY NOTES

JANUARY · 1950

Volume 20 Number 5

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Books and Pamphlets Added to the Library During December

AIR FILTERS

ROWLEY, FRANK B., and JORDAN, RICHARD C. Factors affecting the performance and rating of air filters. University of Minnesota. Engineering Experiment Station. Bulletin no. 16. Minneapolis, The Station, 1939. 54 p.

ALMANACS

The WORLD ALMANAC and book of facts for 1950. 65th year of publication. Ed. by Harry Hansen. New York, New York World-Telegram, c1950. 912 p.

BIOGRAPHY

AMERICAN MEN of science, a biographical directory. Ed. by Jaques Cattell. 8th ed. Lancaster, Pa., The Science Press, 1949. 2836 p.

WHO KNOWS—and what among authorities—experts—and the specially informed. 1st ed. Chicago, The A. N. Marquis Co. [c1949] 796 p.

CHEMISTRY—YEARBOOKS

SOCIETY OF CHEMICAL INDUSTRY. Reports on the progress of applied chemistry. London, The Society [1949] v. 33, 1948. 742 p.

CHEMISTRY, ORGANIC—SYNTHESIS

ORGANIC SYNTHESES, an annual publication of satisfactory methods for the preparation of organic chemicals. Cliff S. Hamilton, editor-in-chief. New York, Wiley [c1949] v. 29. 119 p.

CHROMATOGRAPHY

PARTITION CHROMATOGRAPHY; a symposium held at London School of Hygiene and Tropical Medicine on 30 October 1948. Org. and ed. by R. T. Williams, assisted by R. L. M. Synge. Biochemical Society symposia no. 3. Cambridge, University Press, 1949. 103 p.

CLAY

MARSHALL, C. EDMUND. The colloid chemistry of the silicate minerals. New York, Academic Press, Inc., 1949. 195 p.

DIAZO-COMPOUNDS

SAUNDERS, K. H. The aromatic diazo-compounds and their technical applications [2d ed.] New York, Longmans, Green & Co., 1949. 442 p.

EDUCATION, HIGHER

U. S. OFFICE OF EDUCATION. Accredited higher institutions, 1948. Bulletin 1949, no. 6 [prepared] by Theresa Birch Wilkins. Washington, U. S. Govt. Print. Off., 1949. 120 p.

ELECTRONIC APPARATUS AND APPLIANCES

BATCHER, RALPH R., and MOULIC, WILLIAM. The electronic control handbook. New York, Caldwell-Clements, Inc. [c1946] 344 p.

FIBERS

KIDD, FRANKLIN F., O'CONNELL, ANN Q., and DEAN, GAYLE D. World study of hard fibers and hard fiber products. Part I. Hard fibers—essentiality—availability—requirements—trends. U. S. Office of International Trade. Washington, U. S. Govt. Print. Off., 1949. 78 p.

MATHEMATICAL INSTRUMENTS

BERKELEY, EDMUND CALLIS. Giant brains or machines that think. New York, Wiley [c1949] 270 p.

PAPER MAKING AND TRADE

DAWE, E. A. Paper for printers. Printing theory and practice 25. General editor, John C. Tarr. London, Sir Isaac Pitman & Sons Ltd., 1947. p. 277-340.

HOSMER, JOSEPH B. Georgia opportunities for the manufacture of more paper. Georgia. State Engineering Experiment Station. Special report no. 24. Atlanta, The Station. Georgia School of Technology, 1947. 23 p.

REFRACTORY MATERIALS

NORTON, F. H. Refractories. 3d ed. New York, McGraw-Hill Book Co., 1949. 782 p.

RUBBER

AMERICAN SOCIETY FOR TESTING MATERIALS [*Committee D-11 on Rubber and Rubber-like Materials*] Symposium on aging of rubbers. Chicago spring meeting, March 2, 1949. Special technical publication no. 89. Philadelphia, The Society [c1949] 72 p.

The VANDERBILT rubber handbook. Ed. by S. S. Rogers. 9th ed., 1948. New York, R. T. Vanderbilt Co., c1948. 719 p.

RUSSIAN LANGUAGE

PERRY, JAMES W. Chemical Russian, self-taught. Contributions to chemical education no. 4 [Easton, Pa.] Journal of Chemical Education [c1948] 221 p.

SPECTRUM, INFRA-RED

RANDALL, H. M., FOWLER, R. G., FUSON, NELSON, and DANGL, J. R. Infrared determination of organic structures. New York, Van Nostrand, 1949. 239 p.

SPECTRUM ANALYSIS

GIBSON, KASSON S. Spectrophotometry (200 to 1,000 millimicrons). National Bureau of Standards circular 484. Washington, U. S. Govt. Print. Off., 1949. 48 p.

STRENGTH OF MATERIALS

TIMOSHENKO, S. Theory of elastic stability. New York, McGraw-Hill Book Co., 1936. 518 p.

TANNING

GNAMM, HELLMUT. Die Gerbstoffe und Gerbmittel. 3. neu bearb. und erg. Aufl. Stuttgart, Wissenschaftliche Verlagsgesellschaft, 1949. 570 p.

TRADE DIRECTORIES

NATIONAL DIRECTORY of the Canadian pulp and paper industries, 1949. J. N. Stephenson, editor. Gardenvale, Que., National Business Publications Limited, 1949. 492 p.

ULTRASONICS

CARLIN, BENSON. Ultrasonics. New York, McGraw-Hill Book Co., 1949. 270 p.

WATER—POLLUTION

TULLY, JOHN P. Oceanography and prediction of pulp mill pollution in Alberni inlet. Fisheries Research Board of Canada. Bulletin no. 83. Ottawa, The Board, 1949. 169 p.

WOODWORK

HOYLE, RAYMOND J., and STILLINGER, JOHN R. Wood-using industries of New York; a 1946 census including comparisons with surveys of 1912, 1919, and 1926. Syracuse, N.Y., State University of New York, College of Forestry, c1949. 133 p.

Survey of Periodical Articles

The following are abstracts of opinions expressed by writers in the technical journals. The Institute of Paper Chemistry takes no responsibility for the opinions here summarized.

ADHESIVES

ANON. Emulsion adhesives open new fields for cellophane bag converters. Packaging Parade 17, no. 203: 37, 61-2 (December, 1949).

Union Paste Co., Hyde Park, Mass., has produced a resin emulsion adhesive for both folding cartons and bags that involve combinations of any moistureproof cellophane, cellulose acetate, ethylcellulose sheeting, or some grades of Pliofilm with paper or plain boards, on nearly all window patching machines; this one adhesive replaces as many as five lacquer adhesives and their corresponding solvent thinners. It dries quickly, produces good bonds with little distortion and no ink bleed, requires no additional solvents during a run, creates no fire hazard, causes no unpleasant odors, and is easily cleaned out of the gluepot with water. The emulsion appears white as it is applied, simplifying control of application; the whiteness disappears within a few hours. 3 illustrations. J.A.B.

KLINE, G. M., and REINHART, F. W. The fundamentals of adhesion. Paper Trade J. 129, no. 26: 29-34 (Dec. 29, 1949).

The author reviews the types of chemical bonds (primary and secondary) involved in specific adhesion and describes the influence of the chemical nature of surfaces on the mechanism of bond formation between adhesives and adherends. The various physical factors which affect bond strength, such as surface contact, surface area, and stress conditions, and other factors (molecular weight, molecular-weight distribution, plasticizers, tack temperature, absorbed material, porosity, and prime coats) are also considered. 7 figures and 72 references. E.S.

ADHESIVES—TESTING

LOOMIS, KENYON. The practical aspects of adhesive testing. Tappi 32, no. 12: 97-8A (December, 1949).

The author discusses some of the difficulties involved in a program of adhesives testing and standardization, because the manufacture and evaluation of adhesives have not yet reached the necessary state of scientific development; at the present time they represent more of an art than the result of well-understood, standardized scientific knowledge. To extend existing knowledge and avoid unnecessary duplication, a pooling of the efforts of various interested parties is suggested, including the Adhesives Committee of A.S.T.M. and the Packaging Institute, the Technical Committee of the Adhesives Manufacturers Association, and any committee which TAPPI may choose to appoint. E.S.

MOREHOUSE, FRANK. The packaging adhesion problem. Tappi 32, no. 12: 96-7A (December, 1949).

Supplementing with practical problems and examples, the author em-

phasizes the need for standard testing methods for adhesives. The formation of a TAPPI subcommittee on adhesives (made up of manufacturers and users) is advocated and suggestions for the organization and functions of this committee with subcommittees are given. E.S.

AIR CONDITIONING

HICKS, TYLER G. How humidification cuts paper conversion costs. Paper Trade J. 129, no. 22: 35-8 (Dec. 1, 1949).

Paper storage and converting operations, such as binding, folding, etc., require controlled humidities to prevent loss of product weight and quality. Where the cost of air conditioning is prohibitive, humidification methods utilizing steam or water sprays may be substituted; steam is usually considered the better medium, because the moisture enters the room in the vaporized state and no heat is required to vaporize the water. Two typical humidifier selections are described, illustrating the use of tables and a chart which have been specially prepared to assist in humidifier selection. The correct locations for such installations under different conditions are discussed. 2 tables and 5 figures. E.S.

ALKALINE PROCESSES

MARTIN, J. S. Sulphate pulping of logging and sawmill wastes of old-growth Douglas fir and of certain associated species. Tappi 32, no. 12: 534-9 (December, 1949).

Samples of Douglas fir of a lower quality than desired for lumber were obtained from the vicinity of Oakridge, Ore., and made into sulfate pulp at the Forest Products Laboratory. The samples included rough sound wood from suppressed trees, both old- and young-growth, and portions of old-growth wood infected with white pocket. Wood of equal density and chemical composition but with three stages of decay was pulped: (1) stained wood with incipient decay; (2) firm or intermediate rot; and (3) advanced rot. Sulfate pulping tests were also made individually on sound mountain hemlock, noble fir, and lodgepole pine, which are associated with the Douglas fir, and on a naturally occurring mixture of these species with Douglas fir. Douglas fir and associated species were all pulped satisfactorily by the sulfate process with chemical requirements comparable with those of present mill practice. The pulps made from wood containing incipient, firm, and advanced rot were equal in yield and had a lower bleach requirement than pulps made from the sound wood. The results obtained indicate that the following strength properties might be expected in strong sulfate pulps made from the various woods: (1) Pulp made from sound old-growth Douglas firwood might be slightly lower in bursting strength and significantly higher in tearing strength than southern pine sulfate pulp and probably could be expected to be used for purposes now served by southern pine pulp except where maximum bursting strength or a fine-fibered pulp are needed. (2) Sulfate pulps made from Douglas firwood containing decay will be lower in bursting strength than those from sound wood in proportion to the amount and type of decay. The bursting strength of the pulp made from wood containing advanced rot would probably be about 75% of that of southern pine pulp. (3) Mountain hemlock, noble fir, and lodgepole pine will give pulps with excellent bursting strength and fair tearing strength. (4) Sulfate pulp made from a mixture of 70% Douglas fir, 10% mountain hemlock, 10% noble fir, and 10% lodgepole pine would have a good bursting strength and excellent tearing strength and be of higher quality than pulp made entirely from sound Douglas fir. (5) Pulp of the quality of that obtained from sound

Douglas fir would be produced from compositions of wood in which either 2.6 parts of wood with incipient decay, 1.7 parts of wood with firm rot, or 1.2 parts of wood with advanced rot are mixed with 1 part of any of the associated species, mountain hemlock, noble fir, and lodgepole pine. Because of the packing characteristics of the chips, the lower moisture content of the several types of decayed Douglas fir, as compared with that of the sound wood, would tend to cause a lower pulp production rate and require an adjustment of the chemical charge in the digester. 8 tables and 1 reference. E.S.

REED, A. E., and GILLESPIE, W. F. The centrifugal clarification of sulphate liquor; a report on experiments with white and green liquors. Tappi 32, no. 12: 529-34 (December, 1949).

A description of the equipment, experimental layout, and experimental procedure is given. The effect of six variables on the clarity of white liquor was studied with the following findings: Variation in centrifuged liquor rates up to 10 gal./min. had little effect on the white liquor clarity. Above this rate the percentage of solids in centrifuged liquor increases rapidly as the rate increases. At a liquor rate of 10 gal./min. the percentage of solids in the centrifuged liquor increases rapidly if the solids in the feed are increased above 11%. Clarity of the white liquor is adversely affected by high percentages of free calcium oxide. The percentage of solids in the centrifuged white liquor increases as the temperature decreases. Activity of the white liquor had no appreciable effect on its clarity. Green liquor solids in the causticized liquor are not effectively removed in the centrifuge. The solids remaining in centrifuged liquor were more difficult to remove by secondary clarification than solids remaining in tray-clarified liquor. Green liquor could not be clarified in this type of centrifuge. 4 tables and 7 figures. E.S.

YEGUCHI, HIROSHI. Sulfate cooking of red pine. J. Japan. Tech. Assoc. Pulp Paper Ind. 1, no. 1: 3-16; no. 3: 12-25 (August, December, 1947) [In Japanese; English summary]

Fundamental experiments on the sulfate cooking of red pine were carried out in order to check the influence of various factors on the cooking process. It was found that optimum sulfidity was 40-45% when the total chemical added was 25-30% (calculated as sodium hydroxide); the "minimum effectual hydroxide" (*cf.* B.I.P.C. 11: 112) was 15-16%. A 10° C. rise in the cooking temperature accelerated the cooking rate about 2.5 times, but had no effect on pulp quality. No fiber destruction was noted on cooking to lignin contents of 5 and 4%, when the total chemical was 25 and 30%, respectively. Further cooking destroyed the fiber and resulted in a rapid drop in polymerization and viscosity and a decrease in hemicelluloses. When the total chemical was 20%, the lignin content did not fall below 7%, and further cooking only contributed to fiber damage. In commercial operation a total chemical of 22-23% would be satisfactory; 20% would be the minimum value; it would be impractical to raise the total chemical to 30%. The pulp quality increased with the quantity of cooking liquor, but not significantly. The relationship between liquor-wood ratio, concentration, and total chemical is shown graphically; their effects on reaction rate are indicated. The influences of sodium carbonate, sodium sulfate, sodium sulfite, sodium thiosulfate, and the re-use of black liquor are also considered. 24 graphs and 32 tables. E.G.S.

ALKALINE PROCESSES—ODOR TROUBLES

DEXTER, GREGORY M. Elimination of kraft mill odors. Paper Trade J. 129, no. 20: 78-81 (Nov. 17, 1949).

Each kraft mill presents a special problem in odorous gases to be controlled or eliminated. The author discusses several approaches, including the scrubbing of gases, the Bergström-Trobeck oxidation tower, the Inka tower, improvements in the operation of the recovery furnace, replacement of direct-contact evaporators with larger capacity multiple-effect evaporators, proper instrumentation on evaporators and furnaces, more efficient precepitators, the burning of noncondensable gases, the use of catalysts for the conversion of organic sulfur compounds, increased chimney height, and treatment of waste effluents. The correct solution or combination of approaches will depend on local conditions, the extent of odor elimination or control of waste effluents required by the community, and the willingness of management to meet these desires. 2 tables. E.S.

ALUM

NISHI, TAKEO. A study of the sizing of Japanese paper. J. Japan. Tech. Assoc. Pulp Paper Ind. 1, no. 1: 17-18 (August, 1947). [In Japanese; English summary]

The sizing of Japanese paper is complicated by the fact that even a slight excess of alum in the stock weakens the action of "tororoaoi" (*Abelmoschus manihot*), a mucous substance which is indispensable for uniform sheet formation in the manufacture of the paper. An attempt is made to define the critical quantity of alum to be added; an optimum pH range of 6.8 to 7 is indicated. 1 table and 1 figure. E.G.S.

ALUMINUM

BLAKEMORE, FRED T. New triple-duty aluminum container. Am. Paper Merchant 46, no. 12: 25, 35 (December, 1949).

The Reynolds Metals Co., New York, has introduced an all-aluminum container, called the Reynolds Pak, which is sturdy enough to permit baking, heating, and refreezing of products, and yet is economical enough to be expendable after a single use. Manufactured from a single sheet of lightweight pure aluminum, with a separate lid designed for tight closure by means of a manual closing tool or semiautomatic closing machine, it can neither leak nor absorb moisture or fats. It is claimed to be nontoxic and to give no odor or taste to foods. Because of the high rate of heat transfer through the Pak, foods can be frozen rapidly and baked goods can be cooled quickly. J.A.B.

DR. K. Paper-aluminum combinations for containers. Wochbl. Papierfabr. 77, no. 16: 448-9 (Nov. 30, 1949). [In German]

Brief reference is made to French and Swiss containers, chiefly in cylinder form, where the cylinder portion consists of cardboard lined with aluminum foil, and the bottom and lid are pure aluminum. Different lid constructions are outlined. The containers are tight to air, moisture, odors, oil, etc., and resistant to all substances which do not corrode aluminum. They are used for packaging candy, prepared flour mixes, milk powder, malt, chemical products, tobacco, cigarettes, and similar commodities. E.S.

ASSOCIATIONS

ANON. Packaging and materials handling meeting. Fibre Containers 34, no. 11: 51-6, 61-2 (November, 1949).

A report is given of the Fourth Annual Industrial Packaging and Materials Handling Exposition sponsored by the Society of Industrial Packaging and Materials Handling Engineers and held at Detroit on October 4-6.

1949; jointly with Wayne University the Society also sponsored and conducted the second Packaging and Materials Handling Institute. Summaries of the papers presented at the educational institute are given; in conclusion, reference is made the Third Annual Protective Packaging Competition, an additional feature held in connection with the meeting, and to the different competition awards. 7 illustrations. E.S.

CANADIAN PULP AND PAPER ASSOCIATION. *Technical Section.* Joint meeting of branch and committee chairmen with members of the Executive Council. Pulp Paper Mag. Can. 50, no. 12: 94-100 (November, 1949).

Summaries are given of the reports presented at a meeting in Montreal on October 25, 1949, by the different committee and branch chairmen of the Technical Section of the Canadian Pulp and Paper Association, in which each chairman discussed the status of activities of his group. E.S.

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. Engineering meeting of TAPPI covers many problems from design to operation. Southern Pulp Paper Manuf. 12, no. 12: 44, 46, 48, 73 (December, 1949).

This is a report of the fourth Engineering Conference of TAPPI, held at Boston from Oct. 31 to Nov. 2, 1949. Condensations of many of the papers presented are given [See also Paper Ind. 31, no. 9: 1081-2, 1084, 1092 (December, 1949); papers listed by title only] E.S.

BARK

TAMBLYN, W. G. Flash drying of bark at the Great Lakes Paper Company Limited. Pulp Paper Mag. Can. 50, no. 12: 191-7 (November, 1949).

The author gives a rather detailed description of the various stages of the bark disposal problem at the Thunder Bay newsprint mill of the company. From 1928 to 1939 all the bark from the woodroom was piled and stored on mill property, resulting in a bark pile with approximately 100,000 tons of (airdry) bark. Limitations of space made other means of refuse disposal imperative. A study of available bark-burning furnaces and bark presses led to the purchase of four Giant Nekoosa presses, which reduced the moisture content from 78 to an average of 65%, and to the incorporation of two Dutch ovens into an existing Heine boiler. This arrangement worked satisfactorily, particularly with a combination of fresh and reclaimed bark; no additional fuel of any other kind was required. However, certain operating difficulties were encountered and an increase in production made an increase in the rate of disposal necessary. The feasibility of flash drying wood refuse and bark was studied and two hogs, a flash drier, and the necessary auxiliary equipment were installed in a building adjacent to the boiler house and opposite the Dutch ovens. In this arrangement, the pressed bark passes either the hogs and flash drier (reducing the moisture content to about 35-37%) or it can be fed directly to the Dutch ovens. At present only 50-60% of the bark is flash dried, and undried, hogged bark (63% moisture) is fed to the rear oven spouts to obtain reasonably complete grate coverage. On account of space limitations, the dry bark conveyor cannot be extended to cover the back grates. Various difficulties with plugging, conveying, etc., had to be overcome at the beginning and several changes in the original layout are described. Although the existing system is a vast improvement, there are undoubtedly many other possibilities to increase the efficiency of such refuse-

burning units further. However, after the long period of experimentation, the present system gives such satisfactory results that further tests or modifications are unlikely for some time. In rough figures, hogging the bark has increased the steam flow by approximately 10,000 lb./hr.; hogging and drying have increased it by 20,000 lb./hr. The new system has required the additional labor of only one man per shift. 1 flowsheet, 1 diagram, and 9 illustrations. E.S.

BARKERS AND BARKING

HILL, L. E., JR. Types of hydraulic barkers and how they work. Paper Ind. 31, no. 9: 1062-6, 1073-4 (December, 1949).

The operating principles of different hydraulic barkers are outlined, including the Worthington whole-log barker, the cant barker with oscillating nozzle, the ring barker, the log barker with rotating nozzles, slab barkers, the Worthington small-log barker at Soundview, the Weyerhaeuser large saw-log barker, the Allis-Chalmers Streambarker, the Weyerhaeuser experimental unit at Longview and the first whole log-barker, the lathe type, and the Bellingham-type barker. 4 illustrations and 8 diagrams. E.S.

BEATING

KANE, MORRIS W. A theory on the development of tensile strength during the beating of pulp. Tappi 32, no. 12: 546-52 (December, 1949).

A theoretical equation is given for the development of tensile strength of a pulp during beating. The equation is based on the hypothesis that the tensile strength of pulp is a function of the hydrated and the unhydrated surface present. The development of hydrated surface is calculated from the hypothesis that only two effects are produced during beating: hydration and cutting. This equation fits the present experimental data. 4 tables and 8 figures. E.S.

BIOCHEMICAL TESTING

KITTRELL, F. W. Evaluation of the biochemical oxygen demand in streams. Tappi 32, no. 12: 540-2; discussion: 543 (December, 1949).

Biochemical oxygen demand (B.O.D.) and dissolved oxygen (D.O.) determinations reveal the condition of polluted streams and are useful in predicting results of reduced waste discharge. An idealized example of the method of using these tools is presented. Practical difficulties met in application to stream examination and evaluation, caused by numerous variables in natural streams, and suggestions for minimizing them, are described. These difficulties, imperfect understanding of the fundamentals involved, and a tendency to apply generally accepted concepts indiscriminately to all types of streams, have combined to discredit the method. Recent developments, which provide explanations for past unsatisfactory experiences and point to more acceptable results in the future, are described. Pending further development, it is suggested that empirical rather than theoretical methods of interpreting B.O.D. and D.O. data may be utilized. 10 references. E.S.

BLEACHING—GROUNDWOOD

RICHARDSON, C. A. Groundwood bleaching. Paper Mill News 72, no. 51: 64, 74 (Dec. 17, 1949).

The peroxide bleaching of groundwood at medium density (13-16% in the bleaching tower) at the mill of the Blandin Paper Co. is outlined; sulfur dioxide is used to neutralize the stock at the end of the bleach. The higher the alkalinity of the bleach liquor, the more rapid is the bleaching action. A minimum amount of silicate is necessary for maximum brightness and minimum decrease in strength; it varies with the alkalinity, being higher at higher alkalinities. The bleach plant was originally designed for 60 tons (airdry) per day; by varying the alkalinity, stock temperature, and density, and with a few mechanical adjustments it has been possible to increase the output to over 90 tons regularly. The final brightness of the bleached pulp obtained in commercial operation depends on many factors, including the species of wood, the brightness of the unbleached pulp, the amount of peroxide used, the color of the river water, and the brightness or color of the water used for dilution after bleaching. It has been found that aspen bleaches best, balsam next, spruce slightly less, and jack pine practically not at all. E.S.

BOARD

MÖRATH, EDGAR. "Wood fiberboard." Holzforschung 4, no. 1: 14-25 (1949). [In German]

The author reviews the development of the more important methods of production of fiberboards (Insulite, Celotex, Masonite, Asplund, Fibroplast, etc.), the different types of board (hardboard, insulating board, and foam board), machinery and drying procedures, and properties, testing, and applications of the products. 3 figures and 40 references. E.S.

BOARD, CORRUGATED

LANGE, WILHELM. The manufacture and conversion of corrugated board. Wochbl. Papierfabr. 77, no. 13: 364-5 (Oct. 15, 1949). [In German]

The author describes the available types of corrugated board, their manufacture, raw materials, and applications. Machinery for the conversion to boxes is listed. E.S.

BOARD MILLS

ANON. Treschow-Fritzøes new fiberboard mill. Norsk Skogind. 3, no. 11: 289 (November, 1949). [In Norwegian]

Brief reference is made to the completion of a new insulating-board plant constructed at Larvik, Norway, in the vicinity of the company's sawmill and groundwood mill. The capacity of the plant is about 10,000 tons of insulating board per year; the board is sold under the trade name Trenit. 1 illustration. E.S.

BOARD SPECIALTIES

MODERN PACKAGING. Effective use of displays. Modern Packaging 23, no. 4: 75-9, 178, 180 (December, 1949).

Manufacturers are making use of improved research techniques to measure in advance the effectiveness and acceptance of point-of-sale material, and planned procedures for distribution have been developed. Numerous illustrations indicate the types of displays in use. J.A.B.

BOARD TESTING—PHYSICAL

MOHRER, H. Z., CONOVER, J. H., and FROST, O. W. A quality

control factor for insulation board pulp. Tappi 32, no. 12: 569-74 (December, 1949).

A correlation between pulp quality-factor values and the strength properties of insulation board makes possible the prediction of the type of board that will be made from the pulp tested. This permits better control of the quality of production resulting in more efficient and less costly operation. By using radiant heat in the initial drying stage in addition to hot circulating air, a handsheet, 6 inches in diameter and weighing 14 to 17 grams is dried in 10 to 12 minutes. With this short drying period, a method of test is developed whereby the handsheet can be prepared, dried, and tested within 30 minutes. The burst test on the handsheet is found to give the best correlation between it and the strength properties of the finished board. In order to provide a basis for comparing the inherent strength values of various pulp types, it was found necessary to develop a mathematical relationship to indicate the strength characteristics of the pulp itself. An empirical formula is developed which results in a "pulp quality factor" that is a measure of pulp quality. 4 tables and 1 figure. E.S.

NATIONAL FORGE AND ORDNANCE COMPANY, *Irvine, Pa.* New compression testing machine. Fibre Containers 34, no. 11: 85 (November, 1949).

A brief illustrated description is given of a new compression testing machine (750 pounds capacity) for making standard crush tests of boxboard and for flexure and compression tests of a variety of small containers, drums, and other parts and articles. E.S.

SCOTT TESTERS, INC., *Providence, R.I.* Scott tensile testers for boards. Fibre Containers 34, no. 11: 74-5 (November, 1949).

Reference is made to two models of tensile testers for paperboard testing; the model J is larger and heavier and suitable for wallboard mills, whereas the model DH finds application for lighter weight boards in board mills and container plants. When equipped with properly selected clamps and arranged for the desired test speeds, both models are suitable instruments for making tensile strength and elongation tests. 3 illustrations. E.S.

CARBON BLACK

VENUTO, L. J. New developments in carbon black. Am. Ink Maker 27, no. 12: 23-5 (December, 1949).

The author discusses the differences between the channel-black and furnace-black types of carbon and advances made in the furnace blacks; there is nothing basically new to report on the ordinary channel blacks. However, the difference in the surface characteristics of the channel and furnace blacks offers interesting combinations. Furnace-black particles are more opaque than the particles of channel blacks. Blending gives a beautiful balance, greater opacity, and lower absorption; it also results in greater density with normal grinding or dispersion time, and the resulting inks are nonabrasive. E.S.

CELLULOSE

STAUDINGER, H. Cellulose. FIAT Rev. German Sci. 1939-1946. Preparative Organic Chemistry, Part III: 1-48 (1948). [In German]

Literature on cellulose published in Germany during the war years is re-

viewed under the following subheadings: the problem of determining the constitution of cellulose as a macromolecular natural substance; formation and isolation of cellulose; the nature of cellulose solutions and their derivatives; constitution of celluloses; degradation of cellulose; derivatives of cellulose; dissolution and swelling of cellulose and cellulose derivatives; the fine structure of cellulose; and the composition of natural and artificial fibers. 285 references. E.S.

CELLULOSE—HEMICELLULOSE

JAYME, GEORG. Influence of the hemicellulose content on the behavior of paper and dissolving pulps. Das Papier 3, no. 19/20: 395-6 (October, 1949). [In German]

A brief abstract is presented of lectures given by the author in Sweden. The only new experimental data (hitherto unpublished) concern the distribution of residual lignin (I) and hemicelluloses bound to (I) in the cell walls of spruce sulfite and sulfate pulps. In sulfite pulps (I) appears to accumulate in the outer portions of the cell wall, whereas in sulfate pulps, it is evenly distributed throughout the cell. The author comments briefly on the effect of this distribution (and the concomitant distribution of the hemicelluloses) on the pulp properties, and on the uses of paper and dissolving pulps. L.E.W.

SINGH, KARTAR. Contribution of non-cellulosic constituents to the fine structure of plant fibres. Indian Pulp and Paper 4, no. 4: 164-7 (October, 1949).

A review is given of the literature on hemicelluloses and lignins, from the standpoint of their contribution to the x-ray spectra, fine capillary structure, and strength properties of cellulose fibers. The chemistry and structure of hemicelluloses, the various interpretations of the linkage between some of the pentosans and cellulose in fibers (including the ester linkage theory, the surface combination theory, the mixed crystallization theory, and the cross-bridging theory), and the chemistry of lignin and the nature of its association with polyuronide hemicelluloses are discussed. 51 references. J.A.B.

SMART, CHARLES L., and WHISTLER, ROY L. Films from hemicellulose acetates. Science 110, no. 2870: 713-14 (Dec. 30, 1949).

"Hemicellulose A" (from the alkaline extract of holocellulose of corncobs) gives an acetate which in admixture with cellulose acetate gives clear films, provided the hemicellulose derivative does not exceed 50%. However, "hemicellulose B" acetates give cloudy films when admixed with either cellulose acetate or hemicellulose A acetate. Hemicellulose A was produced by neutralization and precipitation of the alkaline extract, whereas hemicellulose B was the product remaining in solution (after removal of A) which is precipitated with two volumes of ethanol. 6 references. L.E.W.

CELLULOSE ETHERS

VAUGHN, THOMAS H., and SMITH, CLIFTON, E. The relation of temperature and concentration to detergency in systems of sodium carboxymethyl cellulose, sodium alkylaryl sulfonate, and alkaline detergent builders. J. Am. Oil Chemists' Soc. 26, no. 12: 733-7 (December, 1949); *cf.* B.I.P.C. 18: 430.

Further evidence is presented of the effectiveness of sodium carboxymethylcellulose (Carbose) as a synthetic detergent promoter. Systems of sodium alkylaryl sulfonate (Kreelon 4D), Carbose, and inorganic builders

(modified soda or soda ash) were investigated to determine the variations in soil removal and whiteness retention caused by varying the concentration and temperature. An increase in detergent concentration was found to yield higher values both for carbon soil removal and whiteness retention; increased temperatures caused an increase in carbon soil removal values, but a decrease in whiteness retention. The effect of the partial substitution of alkali by Carbose is typified in the comparison of Formulation H (Kreelon 4D 35%, soda ash 65%) and Formulation E (Kreelon 4D 35%, soda ash 50%, Carbose 15%); by this modification, relative carbon soil removal values at detergent concentration of 0.25% and 0.5% are increased approximately 67% and whiteness retention values approximately 900%. 13 figures and 3 references.

J.A.B.

CHEMICAL PLANTS—LOCATION

ANON. How to pick the right plant site. Modern Ind. 18, no. 6: 39-43 (December, 1949).

Directions are given concerning the factors to be considered in choosing a new plant site; some of these are: transportation facilities, taxes, power and fuel supply, and labor and materials available. A handy chart is included, listing the basic points to be investigated. 1 chart, 1 graph, and 16 illustrations.

J.A.B.

CHEMICAL TESTING—CELLULOSE—FRACTIONATION

SCHERER, PHILIP C., and ROUSE, BENJAMIN P. Mechanical properties of high polymers as functions of shape of distribution curve. III. Cellulose nitrate. Rayon and Synthetic Textiles 30, no. 11: 42-4; no. 12: 47-9 (November, December, 1949); *cf.* B.I.P.C. 20: 10.

Using the same method as in the previous experiments, cellulose nitrate dissolved in ethyl acetate was fractionated into nine portions whose D.P.'s ranged from 165 to 550; three more fractions with D.P.'s of 30, 60, and 75 were obtained by precipitation from acetone with water. Films were prepared using commercial ethyl acetate as the solvent, heated, and kept in a conditioning room at constant temperature and humidity for 48 hours before testing. Tests for tensile strength and elongation, folding endurance, bursting strength, and tearing strength were applied, and the results were plotted against D.P. The graphs obtained indicated that the mechanical properties for these cellulose nitrate films remain constant as long as the average D.P. lies above approximately 150; below this value there is a very rapid decrease in the properties until a value of zero is reached near a D.P. of 30. The effect of the shape of distribution curves was investigated by preparing a series of blends of the original fractions. In order to interpret these curves, a "shape factor" which could be correlated with the mechanical properties was obtained by dividing the D.P. at the maximum point by the logarithm of the heterogeneity (average width of the curve divided by the height of the maximum). As the "shape factor" increases up to a value of about 30, the mechanical properties increase rapidly; above a value of 30, very little increase occurs in these properties. It is thus possible to predict the mechanical properties of a cellulose nitrate film from a knowledge of the shape of its distribution curve. 26 graphs, 4 tables, and 8 references. J.A.B.

CHEMICAL TESTING—CELLULOSE—NITRATE VISCOSITY

ALEXANDER, W. J., and MITCHELL, R. L. Rapid measurement of cellulose viscosity by the nitration method. Anal. Chem. 21, no. 12: 1497-1500 (December, 1949).

A simplified technique is described for the rapid determination of the nitrate viscosity of cellulose. Convenience in procedure is achieved by forming the pulp into soft thin disks which may be easily handled in the various stages of nitration and stabilization. Degradation is kept to a minimum by using a small sample of open structure and further by using an optimum acid composition (nitric acid, 64%; phosphoric acid, 26%; and phosphorus pentoxide, 10%) under favorable conditions of time and temperature. Data are presented to show the effect of various changes in the method on the level of the calculated D.P. 9 tables, 1 figure, and 10 references. E.S.

CHEMICAL TESTING—CELLULOSE—POLYDISPERSITY

WANNOW, H. A. The determination of the polymolecularity of cellulose. Melliand Textilber. 30, no. 11: 519-22 (November, 1949). [In German] *cf.* B.I.P.C. 20: 166.

The chain-length distribution of polymolecular cellulose may be investigated by a dispersion analysis in the ultracentrifuge, or by fractionation of the material in the form of a soluble derivative, either by solution in a series of solvent-nonsolvent mixtures or by fractional precipitation from solution. The method of fractional precipitation is described in detail. The interpretation of the experimental results by the construction of diagrams to evaluate the integral and differential distribution functions is illustrated. The weight-average and number-average molecular weights and the concept of nonuniformity are discussed briefly. By fractionating and refractionating an oxidatively degraded cotton it is shown that the separation into eight fractions of about equal weight is sufficient to obtain an accurate picture of the chain-length distribution. This material was treated more thoroughly in the previous reference. 2 tables, 2 diagrams, and 20 references. M.A.H.

CHEMICALS

SHALLCROSS, RUTH E. Supply-demand data on chief nonfibrous raw materials used in the pulp and paper industry. II. Inorganic papermaking chemicals. Tappi 32, no. 12: 16A, 18A, 20A, 22A, 24A, 26A, 28A (December, 1949); *cf.* B.I.P.C. 20: 239.

Statistical data on clay, talcum, titanium dioxide and zinc sulfide pigments, calcium carbonate, calcium sulfate, barium sulfate, sodium silicate, and aluminum sulfate consumed by the pulp and paper industry are given. 14 references. E.S.

YOUNGCHILD, KENNETH E. Better chemicals for the paper industry. Paper Mill News 72, no. 51: 50, 56 (Dec. 17, 1949).

The use of standard chemicals in the paper industry and several new developments are reviewed; the latter include coating agents, defoamers, plasticizers, softening agents, wetting agents, slimicides, etc. E.S.

CHIPS

MURTO, JAAKKO O. Chipping of pulp wood. III. Finnish Paper Timber J. 31, no. 20: 361-70 (Oct. 31, 1949). [In Finnish; English summary] *cf.* B.I.P.C. 19: 555.

With brief refence to the studies and results obtained by Rogers (*cf.* B.I.P.C. 19: 245-6), the author describes comparative chipping tests with different wood species, in which he employed his previously developed small-scale chipping technique. Reducing the size of the cross section of the test

pole to 2 by 4 cm. facilitates the production of fairly ideal radial and tangential chips from the small-diameter Finnish pulpwood. The Jayme-Grögaard method for examining chip damage proved applicable (*cf.* B.I.P.C. 10: 475). Previous results based on variations in chip length and moisture content on sprucewood chipping were confirmed in the present work. Cutting of tangential chips causes greater variations in thickness than the cutting of radial chips; hence, the author recommends the use of both techniques for studies of this kind. From the slow-growing North-Finnish pine, comparatively thin tangential chips were obtained, as compared with chips from the rapid growing pine species of Southern Finland. Although the effect of chip thickness has not been investigated for the range of thickness usual in sulfate pulping, it appears that the variations are insignificant; the same holds for the small difference in thickness between pine and birch chips. Increase in wood density added noticeably to the amount of chipping work required per unit volume of wood. Between the saturation point of the cell walls and wood in a soaked state, no chipping fines were formed from sound hardwood when sharp knives were used. When chipping dense pinewood, fewer fines were obtained than when wood with a great amount of annual growth was used. Further extensive Finnish chipping investigations should be carried out primarily with sprucewood for sulfite pulping, since variations in chip thickness and damage here have greater influence on the papermaking properties than in sulfate pulping. The same number of test specimens is recommended as for testing wood strength properties (a minimum of 25 stems). Since the strength properties of wood vary considerably, not only from stem to stem of the identical wood species, but even in the different sections of the same trunk, strength determinations of the wood should be carried out simultaneously with chip tests. With reference to several photomicrographs illustrating pine and birch chip damage, the author emphasizes the curling caused by chipping, particularly in tracheid walls of pine springwood. This curling is most pronounced at the bending point of the damaged chip and is less noticeable toward the end. It may be possible that this phenomenon accounts for the fact that chipping in mill chippers also affects slightly the strength properties of sulfate pulps. 3 tables, 5 figures, and 8 references. E.S.

CHLORINE DIOXIDE

VINCENT, GEORGE P. What about chlorine dioxide? Paper Mill News 72, no. 51: 47 (Dec. 17, 1949).

The upgrading of pulp with chlorine dioxide to higher brightness and strength retention levels is discussed. Mills having a continuous multiplicity of hypochlorite stages will require no additional capacity to maintain the rated output of the plant when changing to chlorine dioxide bleaching. The only additional equipment required is that for generating the chlorine dioxide; the number of bleaching stages may even be reduced. The gas is currently generated either by the reduction of sodium chlorate by sulfur dioxide or by the oxidation of sodium chlorite by means of chlorine. The chlorate method presents more favorable economic aspects; however, the initial investment is higher. E.S.

CHROMATOGRAPHY

HOUGH, L., JONES, J. K. N., and WADMAN, W. H. Quantitative analysis of mixtures of sugars by the method of partition chromatography. Part IV. The separation of the sugars and their methylated derivatives on columns of powdered cellulose. J. Chem. Soc.: 2511-16 + 1 plate (October, 1949).

Separation of mixtures of simple sugars and of their methyl ethers, on

the semimicro scale, has been achieved by partition chromatography on columns of powdered cellulose (*cf.* B.I.P.C. 19: 155). Application of this procedure to the separation of synthetic mixtures of the simple sugars and their methylated derivatives has given pure specimens of the components, which, under favorable conditions, were recovered quantitatively. E.S.

COMPRESSED AIR

FERNSTROM PAPER COMPANY, *Pomona, Calif.* Compressed air in mill operations. Paper Ind. 31, no. 9: 1075-6 (December, 1949).

The different applications of compressed air to mill operations at the Pomona mill are outlined, including hoists, air-lift tables, loading of press rolls, operation of valves, maintenance work, etc. The compressed air for the entire plant is supplied by a two-stage air compressor installed in 1946; the original equipment dating from 1926 serves as a stand-by unit. Air lines extend to every part of the plant. E.S.

CONTAINER INDUSTRY

ZUSI, CHARLES J. New developments in packaging materials and methods. Fibre Containers 34, no. 11: 100-4 (November, 1949).

The author reviews some of the significant changes in the packaging industry, including, among others, sulfur-stiffened corrugating mediums, Vus boxes, new boxes listed in the Freight Container Classification, new fiberboard-box designs, fiberboard drums and plywood boxes, new applications of aluminum, a new kind of cellophane about two to five times as resistant to water-vapor transmission as the regular moistureproof kind, plastic films, multiwall-bag combinations, prepackaging of vegetables, interior packaging, VPI wrapping papers, standardization, and the trend toward performance standards. 21 sources and references. E.S.

CONTAINER INDUSTRY—LAWS AND LEGISLATION

PARKER, LEO T. Liability for contracts. Fibre Containers 34, no. 11: 94-6 (November, 1949).

Recent important higher-court decisions are reviewed, which illustrate all phases of the law relating to a corporation's liability on contracts made by officials, and also on the officials' personal liability. E.S.

CORROSION

FOELSCH, H. W. Industrial protective organic coatings. Paper Trade J. 129, no. 25: 30-1 (Dec. 22, 1949); Paper Ind. 31, no. 9: 1125-6 (December, 1949).

The author discusses important representatives of the two basic types (airdry or thermoplastic and baking or thermosetting) of resins for industrial protective organic coatings and possible applications. Laboratory immersion tests are required on all new coatings; in addition, test application and exposure under operating conditions should precede all important installations. The manufacturer's directions should always be followed carefully. E.S.

WHITNEY, ROY P. Corrosion problems in the pulp and paper industry. Corrosion 5, no. 12: 435-9 (December, 1949).

The author discusses in some detail the more important corrosion problems encountered in the pulp and paper industry, subdividing his subject into the

difficulties specific to sulfite pulping, alkaline pulping, bleaching, and papermaking. Some of the conditions are so severe that even the most resistant materials are not adequate. For the most part, however, materials reasonably satisfactory from the standpoint of corrosion are available, but in many instances mechanical shortcomings or high cost make the development of other materials highly desirable. The very severe conditions encountered in sulfite pulping are met satisfactorily most frequently by the stabilized 18-8 stainless alloys. These are generally adequate also in alkaline cooking but, in many instances, are difficult to justify economically. The problems encountered in bleaching wood pulp cannot be met satisfactorily with the presently used metallic materials. As an illustration of a difficult, although not unduly severe problem the paper mill stock and white-water systems are cited. Here the mildly acid conditions and moderately elevated temperatures preclude the use of iron and steel, and no other completely satisfactory material is available, except the costly stainless steels. The provision of suitable materials for such services at moderate cost would fill a pressing need in the industry.
E.S.

DESICCANTS

SERGEANT, S. V. The uses of activated alumina. Indian Pulp and Paper 4, no. 3: 129, 146 (September, 1949).

By heating pure aluminum hydroxide to a temperature sufficient to drive off most of the water, it is possible to obtain practically pure aluminum oxide or activated alumina, which is an excellent drying agent. It may be used to remove sulfur compounds from gasoline, color during oil refinings, and water or gas from air, as well as for the dehydration of organic liquids and vapors, such as benzene, pyridine, carbon tetrachloride, and oils. It is one of the best adsorptive media for use in chromatographic analysis and may also serve as a catalyst in numerous organic reactions. In applications as a drying agent, the use of a small quantity of a colored grade of the desiccant as a visible layer is advisable; a change of hue from green to buff indicates the necessity for replacement. Activated alumina can be repeatedly regenerated after use to restore its adsorptive properties. J.A.B.

DIGESTERS

WELHAVEN AND CO., *Oslo.* "Welhaven" acid-proof linings. World's Paper Trade Rev. 132, no. 20: 1350 (Nov. 17, 1949).

Brief reference is made to the acid-resistant linings of digesters and other industrial equipment made by the Norwegian firm. The digester lining consists of two layers of acidproof bricks, both laid in acidproof mortar. The layer nearest to the shell is 20 mm. thick, and the inner layer, 40-50 mm. thick. This lining is much thinner than those previously used and permits a substantial increase in effective digester capacity. E.S.

DOCUMENTATION

CHEMICAL INDUSTRIES. New micro methods ease storage and finding of facts. Chem. Inds. 65, no. 5: 717, 833 (November, 1949).

Recent developments and the possibilities of microfilms, microcards, microcombinations of microfilm and microcards, and micro- and miniprints for libraries and the simplification of bibliographic work are discussed briefly. In conclusion, reference is made to the "Rapid Selector," a device for scanning photometrically a strip of film at a rate of 500 ft./min. and copying the selected frames by high-speed flash photography without slowing down the film. 1 figure. E.S.

DOUGLAS FIR

HAMMOND, R. N., and BILLINGTON, P. S. The relation of kraft pulp qualities to the wood properties of Douglas fir. Tappi 32, no. 12: 563-8 (December, 1949).

Douglas fir logs in the following growth classes were selected and evaluated: 350-year old slow growth; old rapid-growth heartwood (plywood veneer cores); 95-year old rapid growth; 85-year old slow growth; 50-year old medium growth; 40-year old slow growth; 30-year old rapid growth. The samples were evaluated as to average rate of growth, percentages of bark, sapwood, springwood, wood density, and chip density. The woods were all cooked identically to give pulps of from 14 to 17 TAPPI permanganate numbers. The yields varied roughly with the percentage of sapwood. Burst, fold, and sheet density varied directly, and the tearing strength inversely, with the percentage of springwood. The percentage of α-cellulose was definitely lower in the pulps from the woods younger than 85 years old. The young woods produced pulps which bleached to a higher brightness under the same bleaching conditions, but also suffered slightly more strength degradation in bleaching. 5 tables and 4 figures. E.S.

DYES AND DYEING

CORNELY, BERTHOLD. How can the two-sidedness of colored papers be reduced? Allg. Papier-Rundschau no. 14: 681-3 (Nov. 15, 1949). [In German] *cf.* B.I.P.C. 8: 330.

The author discusses the process of sheet formation which is brought about by progressive water removal from the fibrous suspension on the Fourdrinier wire and which results in structural two-sidedness. The characteristic distribution of fillers in a paper sheet shows the tendency for greatest accumulation in the center; the felt side carries less than the center, but still considerably more filler than the wire side, and appears lighter and of better closed formation. The wire side carries little filler and consists chiefly of coarse chemical and groundwood pulp particles. There is a certain relationship between structural and color two-sidedness, based upon the preferential affinity of dyestuffs for fibers and fillers. Suggestions for minimizing the effects of two-sidedness are given, with particular reference to the elimination of color two-sidedness by suitable combinations of dyestuffs of similar shades, but belonging to different chemical classes. Examples of such combinations and their effects are discussed (acid and basic dyes, basic dyes with organic pigments, mineral colors, or substantive dyes, etc.). In conclusion, brief reference is made to cylinder two-sidedness, caused by the sensitivity to heat of certain dyes) and means for its elimination. E.S.

ELECTRONICS

MOUNCE, G. R. Industrial electronics. Pulp Paper Mag. Can. 50, no. 12: 118-20 (November, 1949).

Several applications of electronic equipment to measurement and control problems in industry are outlined; limitations of tubes and recent improvements in radio components are also discussed. E.S.

ENZYMES

GALE, ROWLAND A. Enzymes in the preparation of tub sizing. Paper Trade J. 129, no. 20: 82-3 (Nov. 17, 1949).

Recent developments and present practices in the preparation of starch

for tub sizing with enzymes are outlined, including the use of preneutralized starches of uniform pH values and premeasured enzyme capsules. It is estimated that the industry uses enzymes to convert more than 150 million pounds of starch annually. E.S.

FEED WATER

SCHWEISGUT, FERDINAND. Advances in the field of feed-water preparation for high-pressure boilers. Wochbl. Papierfabr. 77, no. 13: 363-4 (Oct. 15, 1949). [In German]

The author reviews briefly recent advances in the field. E.S.

FIBER—IDENTIFICATION

IVARSSON, BERTIL. Practical guide for fiber identification. Svensk Papperstidn. 52, no. 20: 493-504 (Oct. 31, 1949). [In Swedish; English and German summaries]

Directions for the identification of fibers commonly used in Swedish paper manufacture are given. The data are based on a critical evaluation of the literature in this field. Different methods of analysis and their reliability and applicability have been studied, with special emphasis on morphological analysis. A large number of photomicrographs have been included as a complement to those already found in literature. The preparation of the important reagent solutions and the treatment of the specimens prior to microscopic examination are described. A complete analysis comprises the determination of the fiber group, followed by the identification of the individual fibers by means of their morphological characteristics. Methods for the differentiation of bleached and unbleached sulfite and sulfate fibers in pulps are discussed, and procedures for the determination of the degree of cooking are listed. 23 figures and 7 references. E.S.

FIBER—STRUCTURE

SINGH, KARTAR. Fine structure of plant fibres. Indian Pulp and Paper 4, no. 3: 123-8 (September, 1949).

A fairly complete picture of the structure of plant fibers, interpreted in terms of molecular models and spatial arrangement of atoms, is presented. Since cellulose represents the skeletal structure which is responsible for the cohesive, optical, and mechanical properties of fibers, it is with this constituent that the author is chiefly concerned. The methods used to determine the structure of cellulose fibers include ultraviolet microscopy, polarization optics, electron microscopy, infrared spectroscopy, and x-ray analysis. Recent investigations indicate that cellulose is a two-phase system, consisting of amorphous regions and micelles, which are well-ordered aggregates of molecular segments; both regions are described in much detail. 11 diagrams and 69 references. J.A.B.

WOODS, H. J. The structure of fibres. J. Textile Inst. 40, no. 9: P869-71; discussion: P872-5 (September, 1949).

In a popular manner the author discusses the arrangement of the chain molecules in fibers and the part played by the crystalline and amorphous regions. The x-ray method permitted the study of the structure and some of the properties of the crystalline parts of the fiber. However, for a complete understanding of fiber properties, today's biggest problem is to obtain a better insight into the noncrystalline material, possibly by means of the electron microscope. E.S.

FLAX

TURNER, A. J. The structure of textile fibers. VII. The structure of flax. J. Textile Inst. 40, no. 9: P857-68 (September, 1949); *cf.* B.I.P.C. 20: 358.

A popular account of the morphological and fine structure and the chemical composition of the flax fiber is given. 6 figures, 1 table, and 8 structural formulas. E.S.

FOLDING BOXES

ANON. A bolder GM. Modern Packaging 23, no. 4: 91-3 (December, 1949); Packaging Parade 17, no. 203: 36 (December, 1949).

General Motors has introduced a distinctive new design for its automotive replacement parts packages, which features more distinct identification, better legibility, and money-saving simplification. The GM emblem is put into sharp relief as the body of the design, which is printed with glossy black ink on brilliant yellow stock. The part identification is repeated on both end panels in large, easy-to-read type. The number of different sizes of cartons has been reduced 56%, representing considerable savings in the cost of preparation and adding to the flexibility of handling. 4 illustrations. J.A.B.

ANON. Carton serves as baking tin. Packaging Parade 17, no. 203: 39 (December, 1949).

Little America Frozen Foods, Inc., Pittsburgh, packs frozen muffin batter in cartons made of "Bake-a-Pie" stock, which does not burn at high oven temperatures, so can be used for baking. The cartons, manufactured by Sutherland Paper Co., Kalamazoo, Mich., are rigid, have good printing qualities, and can be set up at the rate of 60 per minute on Kliklok machines. 3 illustrations. J.A.B.

MODERN PACKAGING. Aunt Jemima ready-mix. Modern Packaging 23, no. 4: 98-103 (December, 1949).

Aunt Jemima pancake flour, first produced in 1889, represents the classic example of a trademark which has been indelibly impressed upon the public mind through association with a living counterpart. It has the distinction of being the first packaged, prepared mix, and it was among the first products to introduce selling by demonstration. Premiums, such as rag dolls and sirup pitchers, have played an important part in the continued popularity of Aunt Jemima products. 18 illustrations. J.A.B.

FORESTS AND FORESTRY

AMIDON, G. B. The planting job in the Lake States. Pulp Paper Mag. Can. 50, no. 12: 126-8 (November, 1949).

There are five million acres of deforested forest land in Minnesota, Michigan, and Wisconsin, which must be planted to make it productive; nearly two thirds of this amount is in private ownership, largely small holdings. The author discusses the size of the job, accomplishments to date, planting methods, and planting costs and possible returns. Considerable progress has been made by private industry within recent years, and the possibilities of machine planting indicate that a major part of the program can be carried out at a permissible cost (maximum $15.00 per acre under current stumpage values). E.S.

CALLAHAN, JAMES D. The forestry division—guardian of Crossett's raw material supply. Southern Pulp Paper Manuf. 12, no. 12: 38-9, 42, 74 (December, 1949).

An illustrated description of the organization and different activities of the forestry division of the Crossett Paper Mills, Crossett, Ark., is given. E.S.

HODGINS, H. J. Wood procurement and utilization. Pulp Paper Mag. Can. 50, no. 12: 136, 138, 140-1, 144, 146 (November, 1949).

The author traces the history of wood procurement and utilization on the coast of British Columbia from its initial stages to the present. For practically the past 100 years, wood usage in this region has been influenced by a liquidation forest policy. With particular reference to the pulp and paper industry, the author describes the recent changes in the species of wood and quality of materials used, wood operations, and processing plants, and the gradual conversion to sustained-yield management. E.S.

VAN VLYMEN, V. P. Aspen grove type (1921 burn) Iroquois Falls, Ontario. Pulp Paper Mag. Can. 50, no. 12: 130, 132, 134 (November, 1949).

About 43% of the area burned in an extensive fire in 1921 is stocked with young aspen poplar, 15% is restocking to spruce and balsam (which is estimated to be merchantable in 75 years), and 17% to jack pine (merchantable in 25 years). The aspen growth as a whole is healthy and vigorous, although there is considerable difference in average size attained by individual stands. Cutting of selected areas for pulpwood should be possible in 10 years, and the type as a whole will be merchantable after 20 years, yielding from 15 to 20 cunits per acre. No appreciable loss through decadence or rot is expected until the stand is 60 years old. It is apparently possible to grow aspen pulpwood in this region on a 50-year rotation. Coniferous regeneration in these hardwood stands is sparse and, unless the area is planted, it will not restock with spruce and balsam for well over 100 years. E.S.

GROUNDWOOD MILLS

EVANS, JOHN C. W. Canada's newest groundwood mill. Pulp Paper Mag. Can. 50, no. 12: 81-7 (November, 1949).

Following a brief history of the Abitibi Power & Paper Co. Limited at Iroquois Falls, Ont., an illustrated description of the new groundwood mill and woodroom, including bark and refuse disposal and air conditioning system, is given. There are 20 Waterous Super-type magazine grinders with artificial pulpstones installed in the new mill, whereas the old mill used 57 three-pocket grinders. The old groundwood mill is now being converted into a power-generating plant with a capacity of 28,000 h.p.; this project was held up until the new mill went into operation. E.S.

HARD WOODS

ATCHISON, JOSEPH E. Present and potential use of hardwoods in western Europe's pulp-paper industry. Paper Trade J. 129, no. 23: 18, 20, 22 (Dec. 8, 1949).

A survey of seven Marshall-plan countries is presented, covering Italy, France, Western Germany, Austria, Belgium, Holland, and the United Kingdom. E.S.

HEATING (HIGH-FREQUENCY)

LASSBERG, JOSEPH VON. Heating by means of high frequency and infrared radiation. Das Papier 3, no. 19/20: 377-9 (October, 1949). [In German]

The principles and economics of high-frequency and infrared heating are discussed, with particular reference to applications in the pulp and paper and similar industries. 14 references. E.S.

HISTORY

BOCKWITZ, HANS H. Advances in paper-historical research. Wochbl. Papierfabr. 77, no. 11: 320 (Sept. 15, 1949). [In German]

A brief international review of recent historical publications in the field of papermaking and watermarks is presented. E.S.

SPORHAN-KREMPEL, LORE. 150 years of papermaking in the valley of the Strudelbach. Wochbl. Papierfabr. 77, no. 9: 267-8 (Aug. 15, 1949). [In German]

The fate of the paper mill at Enzweihingen and its owners is described; the mill probably started around 1790. E.S.

WEISS, WISSO. Goethe as paper fancier. Wochbl. Papierfabr. 77, no. 13: 367-8 (Oct. 15, 1949). [In German]

Reference is made to quotations from Goethe's letters and works in which paper is featured. E.S.

WEISS, WISSO. Old papermaking: under what conditions could a papermaker journeyman become master? Wochbl. Papierfabr. 77, no. 15: 424-6 (Nov. 15, 1949). [In German]

In this historical study of old paper-trade customs it is shown that any learned papermaker journeyman could become master by buying or leasing a paper mill and employing two or more journeymen; under these conditions he was also allowed to keep and teach apprentices. However, no apprentice could be employed, if he engaged only one journeyman. This stipulation was based on the nature of papermaking by hand, which required three learned papermakers (vatman, couchman, and layman) who worked as one unit, and prevented the substitution of an unskilled apprentice for any of the three professional workers. E.S.

HUMIDITY

LIEBERT, ERHARD. A conditioning plant without relay. Wochbl. Papierfabr. 77, no. 15: 415-16 (Nov. 15, 1949). [In German]

A simple arrangement for controlling the R.H. in a constant humidity room is described, where the usual hair hygrometer is replaced by a paper strip 10 cm. wide (e.g., imitation parchment paper), 7-10 m. long, and cut from the cross-machine direction. One end of the strip is fixed to the wall, the other is connected to a switch system. The operation of this switch is described, supplemented by a diagram. It is claimed that the R.H. in the conditioned room can be maintained between 65 and 65.5%. E.S.

HYDRAULIC TURBINES

HAFNER, RAIMUND. The modern Kaplan turbine and its economy as drive in the paper industry. Wochbl. Papierfabr. 77, no. 9: 261-4 (Aug. 15, 1949). [In German]

The suitability and advantages of the Kaplan hydraulic turbine for paper mills with irregular water supplies are outlined. 2 diagrams. E.S.

INSECTS AND VERMIN

PEST INFESTATION LABORATORY. Impregnated cellulose wadding; a new insect-proof material for packing. World's Paper Trade Rev. 132, no. 22: 1502 (Dec. 1, 1949); Paper Container 62, no. 1: 15 (January, 1950); Brit. Packer 11, no. 12: 34-5 (December, 1949).

Reference is made to successful laboratory tests with DDT-impregnated cellulose wadding placed between two layers of paper for wrapping bulky packages with an insectproof cover, particularly for shipments to the tropics. No sealing is required, as long as there is a fairly large overlap. The method will soon be tested on a commercial scale. E.S.

JUTE

GUPTA, A. B. SEN, and CALLOW, H. J. Effect of preliminary hydrolysis on the determination of lignin in jute. J. Textile Inst. 40, no. 9: T650-5 (September, 1949).

The authors present evidence that the Norman and Jenkins modification for the accurate determination of lignin in straw by prehydrolysis of the pentoses with 5% sulfuric acid prior to treatment with 72% sulfuric acid (*cf.* B.I.P.C. 5: 178-9) is not applicable to jute. Prehydrolysis of jute with 5% sulfuric acid at 2° C. not only removes pentoses, but also dissolves part of the lignin; hence, a more correct value is obtained without such a pretreatment. No increase in the lignin value was observed, when xylan, in the form of total cellulose, was added to prehydrolyzed or unhydrolyzed jute. As only a fixed amount of lignin could be removed from the fiber by acid pretreatment, it seems most likely that there are two types of lignin present in jute, one soluble and the other insoluble in dilute acid. 5 tables and 12 references. E.S.

LESPEDEZA SERICEA

SPROULL, REAVIS C., and BANKS, FRAZER, JR. Lespedeza sericea: a new source of pulp for papermaking. Chemurgic Digest 8, no. 12: 7-9, 11, 14 (December, 1949).

Lespedeza sericea is currently being used as a soil builder, to prevent erosion, and to return organic matter to the depleted soil; as a plant for grazing during the early spring and summer; as a hay crop in the fall; and as a seed crop in the early winter. In addition to these uses, it has recently been found that the hard stalks remaining after the seed is removed may be converted into a fair grade of pulp and paper. Various cooking techniques have been used, and experimentation is still being carried out at the Southern Research Institute. No debarking is necessary for these cooks, and because of the small amount of pith, the chemical consumption is low. The fibers produced are short and have a high gloss; conventional bleaching methods easily bleach the pulp to the desired whiteness. The cellulose content of *Lespedeza sericea* was found to be 45% using sodium chlorite as the bleaching agent and 42% when nitric acid was used. 4 illustrations. J.A.B.

LIGNIN

ABADIE, F. A. The green coloration of wood produced by the action of acids and its relationship to the lignin-cellulose bond. Norsk Skogind. 3, no. 11: 290-4 (November, 1949). [In French and Norwegian; English summary]

In the early history of wood chemistry it was reported that wood flour turned emerald green when treated with fuming hydrochloric acid. Different theories have been postulated to explain this color reaction; according to Hägglund and Björkman (*cf.* Biochem. Z. 147: 74-89 [1924]), the color is probably produced by a lignin-carbohydrate complex. Bryde and Rånby (*cf.* B.I.P.C. 18: 149-50) observed during the nitration of semichemical pulps that sometimes only partially acetone-soluble substances are obtained; this fact has also been connected with the presence of the above-mentioned lignin-carbohydrate complex. The author's experiments confirm the definite relationship between the appearance of the green color and the presence of substances which produce acetone-insoluble nitrates. The color reaction is not restricted to fuming hydrochloric acid, but is characteristic of strong mineral acids in general, because it can also be produced with fuming hydrobromic acid or 50% sulfuric acid. The moisture content of the sample does not influence the results. The color is obtained with softwoods (spruce and pine) as well as with hardwoods (poplars and aspen); however, in the second case, the reaction is of very short duration (scarcely 12 minutes) and the color produced is olive green and not emerald green. Whereas wood and groundwood pulp give the typical green color reaction, chemical pulps do not produce it; mono- and bisulfite semichemical pulps produce a whole range of colorations, varying from that obtained with wood to the absence of the reaction in chemical pulps. The color appearing on the addition of fuming hydrochloric acid to pulp is very easy to produce and the intensity and permanence of the reaction offer a simple and rapid method for the approximate estimation of the carbohydrates bound to lignin. Bryde (*cf.* B.I.P.C. 18: 474-5) has also pointed out that the physical properties of a semichemical pulp are greatly influenced by the splitting of the bond between carbohydrate and lignin; hence, this method should assume practical significance. 2 tables and 11 references. E.S.

FREUDENBERG, KARL. The formation of lignin-like products under physiological conditions. Sitzber. Heidelberg. Akad. Wiss., Math.-naturwiss. Klasse no. 5: 151-8 (1949). [In German]

Coniferyl alcohol, when exposed to the action of dehydrase isolated from the fungus *Psalliota campestris* at pH 7 for one to three days, yields about 90% of a condensation product (DHP). DHP shows the same properties as native spruce lignin. It gives the same color reactions, is light cream in color, and optically inactive. It gives 1.3% formaldehyde on distillation with sulfuric acid and has a molecular weight of 820. With 72% sulfuric acid, DHP gives 95% Klason lignin. DHP dissolves completely in bisulfite; its lignosulfonic acid shows the same ultraviolet absorption spectrum as that of other lignosulfonic acids. It reacts with thioglycolic acid, and on methylation with diazomethane and methyl sulfate gives a methylated lignin with 33% methoxyl. It dissolves in 30% sodium *m*-xylenesulfonate solution and separates again upon dilution. When subjected to the same reactions as used for the isolation of cuoxam spruce lignin, DHP gives a product resembling cuoxam lignin. On treatment of coniferyl alcohol with dilute acid, polymerization products which have the same composition as the monomer are obtained. They differ from DHP in their chemical and physical properties. 4 footnotes. F.E.B.

FREUDENBERG, KARL. Lignin. FIAT Rev. German Sci., 1939-1946. Biochemistry, Part III: 159-84 (1948). [In German]

Literature on lignin published in Germany during the war years is reviewed under the chapter headings: determination of lignin; isolation, comparison with the lignin in wood; combination of lignin in wood; molecular size and shape, optical properties, solubility; the origin of formaldehyde; the aromatic nature, determination of phenol groups; lignosulfonic acid, its hydrogenation and oxidation; various observations; and model experiments. 88 references. E.S.

KRATZL, K., and RETTENBACHER, F. The structure of the side chains in lignosulfonic acids. IV. The proof of a coniferyl aldehyde structure. Monatsh. 80, no. 5: 622-33 (October, 1949). [In German] *cf.* B.I.P.C. 18: 838.

On alkaline hydrolysis of lignosulfonic acid, aldehydes are formed as the result of a reversed aldol scission. If, as Freudenberg has postulated, lignin is an etherlike condensation product of coniferyl aldehyde, alkaline hydrolysis should give vanillin and acetaldehyde. This hypothesis is tested with model substances in a specially designed apparatus which permits the removal and quantitative determination of the acetaldehyde before it can undergo secondary reactions. 3-Methoxy-4-hydroxy-3',4'-dimethoxychalcone (I), its sulfonic acid (II), flavanone (III), and cinnamylhydrosulfonic acid (IV) are used as model substances. (I) and (II) give acetoguaiacone and veratric aldehyde in 60-80% yield after six hours' heating. (III) and (IV) give 90 and 100% benzaldehyde, respectively, and about 20% acetaldehyde. Spruce lignosulfonic acid also gives vanillin and acetaldehyde. The latter is isolated as 2,4-dinitrophenylhydrazone and as the dimedon derivative. In order to determine the ratio of vanillin to acetaldehyde at certain reaction times, a series of hydrolyses are run in what is called a "stepwise hydrolysis." It is found that the vanillin formation does not occur as continuously as the acetaldehyde formation. A beech lignosulfonic acid gives a mixture of vanillin and syringic aldehyde in addition to acetaldehyde. These results support the hypothesis that at least part of the lignosulfonic acid possesses the structure of a polymerized or condensed coniferyl (or syringyl) aldehyde hydrosulfonic acid grouping. 5 figures and 18 footnotes. F.E.B.

RAFF, R. A. V., and TOMLINSON, G. H., II. Mild oxidation of alkali lignins. Can. J. Research 27 F, no. 11: 399-418 (November, 1949); *cf.* B.I.P.C. 19: 631-2.

Following the discovery that the reinforcement of GR-S rubber by alkali lignins is greatly enhanced if the lignins, prior to their coprecipitation with the latex, are subjected to oxidation, the reaction of alkali lignins with oxygen and the properties of oxidized lignins were studied. It was found that particularly the melting points of the lignins and their lyophilic properties are increased by continued oxidation. This suggested that these two properties are mainly connected with, and possibly responsible for, the reinforcing capacity of the oxidized lignins in the rubber, which in turn is correlated with particle size, surface area, and adsorptive power. It could also be established that, providing definite coprecipitation conditions are maintained, a well-defined oxidation range exists, over which lignins display optimal reinforcing properties. 5 tables, 8 figures, and 8 references. E.S.

LIGNIN—THIOLIGNIN

ENKVIST, TERJE, MOILANEN, MAURI, and ALFREDSSON, BO.

Experiments on the yield and reaction velocity of the formation of thiolignin from sprucewood. Svensk Papperstidn. 52, no. 21: 517-25 (Nov. 15, 1949). [In German; English and Swedish summaries]

According to Hägglund (*cf.* B.I.P.C. 11: 446-7) about 60% of the lignin can be extracted from sprucewood by alternate treatments of the wood with hydrogen sulfide at pH 7 and 100° C., and extraction with pyridine, dioxane, or 75% ethanol, whereupon, the dissolution of lignin ceases. In order to determine whether the impossibility of removing the residual 40% is the result of a mechanical hindrance, such as an encasing of the lignin by wood polyoses or other cell membranes, or by the formation of an impermeable reaction product of lignin which prevents the penetration of the hydrogen sulfide, a series of cooks were made under varying conditions. When the wood, after being heated with hydrogen sulfide at 100° C., was extracted with pyridine and dilute sodium hydroxide, when the cook was carried out with a large excess of hydrogen sulfide at pH 7 and 100° C., or when the cooking time was extended to 192 hours, no improvement in the result was noted. When the temperature was raised to 160° C. and the reaction time extended to 72 hours, a small increase in lignin was observed. In cooks with aqueous or 60% alcoholic hydrogen sulfide solutions, the yield of thiolignin also increases with increasing alkalinity up to a pH of 8.5 and becomes fairly constant above this value. The yield of extracted lignin does not change when the wood is beaten in a colloid mill, pretreated with alkalies, prehydrolyzed with acids, or swollen with zinc chloride or calcium thiocyanate. Prechlorination of the wood has no effect on the dissolution of the lignin on treatment with hydrogen sulfide. Better results are obtained with a solution of hydrogen sulfide in pyridine at 170° C., whereby up to 90% of the lignin is dissolved in 17 hours, simultaneously with 13% carbohydrates. A microscopic investigation in ultraviolet light according to Lange (*cf.* B.I.P.C. 17: 703) of the hydrogen sulfide-cooked sprucewood, at pH 7 and above 100° C., shows that the lignin has fused into the lumina of the cells and, in many cases, has filled them up completely. 8 tables, 9 figures, and 15 references. F.E.B.

LIME AND LIMESTONE

GIBBS, RALPH. Fundamentals of lime kiln thermodynamics. I. Paper Ind. 31, no. 9: 1070-3 (December, 1949).

Taking into consideration the preheating required for calcining and superheating calcium carbonate, the author estimates heat losses, heat in the discharged product, kiln-shell heat losses, and kiln-gas heat loss. The perfect kiln with its concomitant ideal saving in heat is also discussed. L.E.W.

MACHINERY

ANON. Bagley & Sewall Co.—paper machine builders. Paper Trade J. 129, no. 24: 33-8 (Dec. 15, 1949).

Following a brief history of the Bagley and Sewall Co., founded in 1823 at Watertown, N.Y., by a young millwright, George Goulding, the different departments and machine shops of the present company are described, with particular reference to their production of papermaking machinery, including Fourdrinier and cylinder machines. Before shipment, each machine is assembled and run at slow speed for checking; the larger paper machines are usually assembled and tested in sections. After being checked, the machines are dismantled and packed for shipment. 18 illustrations. E.S.

HARPER, J. C., JR. Paper machine auxiliaries. Fibre Containers 34, no. 11: 44, 49-50 (November, 1949).

Recent improvements on cylinder and Fourdrinier machines from wet end to slitters and winders are discussed. E.S.

MACHINERY—BEARINGS

ANON. Celoron Geolite; a new achievement in non-metallic gears. World's Paper Trade Rev. 132, no. 19: 1232, 1234, 1236 (Nov. 10, 1949).

Brief reference is made to "Geolite" pinions constructed of Celoron fabric-base laminated plastic, in which the individual plies are placed at equal, narrow angles relative to each other, so that the complete laminate will contain plies with the longitudinal threads (with maximum tensile strength) running in all directions; this arrangement results in uniform strength of all pinion teeth molded from such a laminate. The usual metal shrouds are replaced by shrouds made from Celoron; Geolite pinions have approximately one sixth the weight of steel. Calculations, tabulated data, and 2 figures. E.S.

MACHINERY—BEATERS

ANON. Causes for the use of batch process. Indian Pulp and Paper 4, no. 2: 93, 114 (August, 1949).

The author shows that continuous stock preparation can be used efficiently and economically for the mass production of one type of paper; beaters, however, will always be needed where varieties of paper must be produced from different kinds of pulps. E.S.

FOWLER, P. B. Some remarks on stock preparation. Southern Pulp Paper Manuf. 12, no. 12: 50, 52 (December, 1949).

The need for a better terminology in stock preparation is emphasized; the terms "hydration" (particularly when used in combination with "freeness" and "slowness") and "refiner" are used to illustrate the point. The author considers the beater still the most flexible of all stock-preparation machines; the two major disadvantages of the jordan (or of any similar conical machine) are the taper and filling unbalance. A modern beater-jordan combination with proper tackle and power supply is the most flexible and nearly foolproof setup at present. In conclusion, jordan controls are discussed; in general, the author does not favor their use. E.S.

HAYES, FRANK. The control flow Victory beater. Paper Mill News 72, no. 50: 14, 18, 20-2 (Dec. 10, 1949); *cf.* B.I.P.C. 18: 598; 19: 29-30.

The development, special construction features, and mode of operation of the Victory beater are described; reference is made to the latest development, the Multi-Roll Victory beater, with three successive rolls in one unit, the first installation of which has been made at the Palatka mill of the Hudson Pulp and Paper Corp. in Florida, for treatment of southern kraft pulp. The potentialities of this unit are still under investigation and full technical data will be released later. 9 illustrations. E.S.

MACHINERY—BINS

HURTER, A. T. An improved system for chip storage and handling. Pulp & Paper 23, no. 13: 64, 66, 69 (December, 1949).

Recent trends in the design of chip storage bins with arrangements for blending and reclaiming chips favor a structure on the ground level instead

of over the digesters; this design increases storage capacity and reduces construction cost. An illustrated description of the system developed by Stadler, Hurter & Co. is given, which is designed for the rapid handling of large volumes of chips to and from storage on standard conveying equipment. Similar bins can be applied to the handling and storage of hogged fuel and bark. The bin structure may be subdivided into individual compartments for various wood species. Loading is accomplished by an overhead conveyor with a reversible traveling tripper; the reclaiming of chips from the bin is performed by means of a patented traveling twin-screw discharge feeder operating in conjunction with a chip belt conveyor carrying the chips from storage to the digester. Deflectors prevent the packaging of the chips inside the bin; fire sprinklers can be mounted underneath the deflectors, in addition to those installed on top of the bin. Six diagrams help to illustrate the details and many special features of the construction. E.S.

MACHINERY—CHIPPERS

BARROW, H. B. Chipper drives. Paper Trade J. 129, no. 25: 28-9 (Dec. 22, 1949); Southern Pulp Paper Manuf. 12, no. 12: 58, 60 (December, 1949); Paper Mill News 72, no. 49: 12, 18 (Dec. 3, 1949); Pulp Paper Mag. Can. 50, no. 13: 111-12 (December, 1949).

The author discusses the load requirements of chippers and the advantages and disadvantages of synchronous, squirrel-cage, and wound rotor motors for driving chippers. E.S.

ENOKIHARA, SOGO. Design of pulp mill machinery. II. Chippers. J. Japan. Tech. Assoc. Pulp Paper Ind. 1, no. 3: 6-11 (December, 1947). [In Japanese; English summary]

In a dynamic analysis of chippers, a hydraulic press equipped with a knife was used to determine the cutting resistance of spruce and birch bolts. The cutting angle is calculated for the nine-foot chipper of the Tomai mill. The concept of volumetric efficiency (Q'/Q) is presented; Q' represents the actual volumetric output of the chipper per hour; Q, on the other hand, is the theoretical output, based on the cross-sectional area of the spout, the cutting depth of the knives, the number of knives, and the speed of the disk. Operating data for the Tomai mill indicate a volumetric efficiency of 35%. Energy fluctuations and power requirements are also considered. 4 tables, 2 diagrams, and 3 graphs. E.G.S.

MACHINERY—CONVERTING MACHINERY

WALMSLEY, W. R. Cylinder press cutting and creasing. Shears 67, no. 684: 12-15, 40 (December, 1949).

A general discussion is presented concerning cutting, creasing, and cylinder press make-ready, with directions as to the proper dies; the most desirable height, width, and hardness of the knives; the best corking material and its optimum height; and the methods of adjusting the height of the creasing rule and the counter. Two-revolution cutters and creasers have been found by carton manufacturers to be superior to the drum-cylinder type in speed of production. A glossary of terms is included. 3 illustrations and 1 diagram. J.A.B.

MACHINERY—CURLATOR

KOLLER, ALFRED. Curlated pulp. Wochbl. Papierfabr. 77, no. 11: 315-16 (Sept. 15, 1949). [In German] *cf.* B.I.P.C. 19: 555-6.

The construction and operation of the Curlator are described briefly. 2 figures. E.S.

MACHINERY—ELECTRIC EQUIPMENT

FULTON, DAVID C. Electrical story at Camas. Pulp & Paper 23, no. 13: 52, 90 (December, 1949).

Major electrical installations at the new Camas wood mill supplied by Westinghouse are described briefly, including the distribution center, equipment used with the hydraulic barker, motors, crane control, and industrial reflector-type incandescent lighting. E.S.

MACHINERY—PACKAGING MACHINERY

ANON. Mechanized packaging rings profit bells. Modern Ind. 18, no. 6: 49-52 (December, 1949).

An increasing number of manufacturers are cutting their packaging costs and increasing their rate of production by installing mechanical equipment to replace hand operations. Several examples are given, and some of the modern developments in this field are illustrated. 18 illustrations. J.A.B.

ZIEMBA, JOHN V. Gets bigger output of better packages with less labor. Food Inds. 21, no. 12: 1762-3 (December, 1949).

Reference is made to an automatic cartoning unit at Rice's Bakery in Baltimore, which can be adjusted to three different sizes of cartons and handles 1800 to 2400 packages of pies or cakes per hour. The laminated moistureproof carton with cellophane window is especially designed for easy opening and closing; there is no need for an additional overwrap and the rigidity of the carton prevents the contact of the icing with the window. All setting-up, closing, gluing, and labeling operations are automatic, with the exception of the insertion of the product into the carton, requiring a crew of three girls in the place of the previous eight operators on one line. However, when the knocked-down cartons become bent, jamming of the machine may result. This problem has been solved by shipping each case of 200 cartons in layers of 50 with cardboard liners between the layers, which protective practice eliminated the bending. E.S.

MACHINERY—PAPER MACHINE

ANON. Breast box experiment; successful use of bakelite laminated sheet. World's Paper Trade Rev. 132, no. 20: 1362, 1364 (Nov. 17, 1949); Paper-Maker (London) 118, no. 5: 327 (November, 1949).

Bakelite fabric-base laminated sheet has been successfully used for lining the machine chest, breast box, and delivery board of a British paper machine. The smooth surface of the material is not affected by pulp-mill liquors; after a year's constant use it shows no sign of deterioration. The new material has been adopted for all components of the structure, including weirs, spreader bars, and baffle board, and certain blemishes in the finished paper have been completely eliminated. This is the first application of this kind; however, the material has previously been used for suction-box covers, pulp paddles and scrapers, beater-cover linings, gears, water-lubricated bearings, pump parts, etc. 2 illustrations. E.S.

MACHINERY—PUMPS

FAIRBANKS, MORSE & COMPANY. Bladeless, clodfree pump

demonstrated. Paper Trade J. 129, no. 25: 29-30 (Dec. 22, 1949); Chem. Processing Preview 13, no. 1: 66 (January, 1950).

Reference is made to a new type of pumping unit for handling trash and sewage, which is characterized by a bladeless impeller without vanes on which trash or other material can catch. The fluid passes through the impeller through a single rotating channel or passageway with the centrifugal force doing the work. 2 figures. E.S.

MACHINERY—SAVE-ALLS

NIBERGER, B., and BODETTE, R. E. White-water clarification; Savalla vacuum saveall flotation process. Tappi 32, no. 12: 574-6 (December, 1949).

The method of operation of the Savalla saveall is described. The flotation principle in the unit is based on the theory of paper sizing developed by R. Lorenz (*cf.* Alexander, Jerome. Colloid chemistry, theoretical and applied. New York, Chemical Catalog Co., 1932. v. 4, p. 81-6) with the exception that air is infused in the white water. Various coagulants have proved satisfactory in the process. Those mostly used are aluminum sulfate, caustic soda, rosin size, animal glue, turkey-red oil, synthetic resins, and "pitch," the latter being the final residue obtained in the manufacture of distilled red oil and tall oil. As a general rule, when choosing coagulants for the unit, no additional chemicals should be added to those already used within the mill system. A unit recently put into operation at the Deferiet mill of the St. Regis Paper Co. is recovering approximately eight tons of valuable solids a day, the average recovery efficiency being about 98%. Five different kinds of coagulants have been tried successfully. The recovered stock, which is of fairly light consistency, usually ranging from about 40 lb. to about 100 lb. per 1000 gal. depending on the amount of solids contained in the white water, is returned directly to the fan pump on the paper machine without causing any trouble. Although this method has been followed in Europe for about three years, this is the first time it has been used in the United States. The high efficiency in recovering suspended solids from the white water and the possibility of selecting the most suitable coagulants result also in a significant B.O.D. reduction. Five-day B.O.D. tests by independent U. S. laboratories have shown reductions of well over 90%. 1 table and 5 figures. E.S.

MACHINERY—SLITTERS AND WINDERS

BALTZ, W. E. Winder-shaft drive and winder-shaft diameter. Das Papier 3, no. 19/20: 393-5 (October, 1949). [In German]

The advantages of modern d.c. shunt-wound winder and rewinder drives and different regulator combinations are discussed; for satisfactory regulation, large shaft diameters are recommended, so that the ratio between the empty shaft and wound roll is not too great. Although this involves a reduction in the amount of paper wound per roll, the loss is actually not too large and is compensated by stronger rolls with a firm center. 2 diagrams. E.S.

MACHINERY—SULFUR BURNERS

CONROY, E. H., JR., and JOHNSTONE, H. F. Combustion of sulfur in a Venturi spray burner. Ind. Eng. Chem. 41, no. 12: 2741-8 (December, 1949).

The literature on sulfur burners is largely descriptive and provides little information useful for design purposes. To supply factual data, a small spray burner was built and its performance studied by measuring the size distribu-

tion of the droplets and the temperature and composition profiles in a cylindrical combustion chamber. Flame volumes calculated on the basis of rates of evaporation of the droplets are somewhat smaller than the measured volumes required for combustion, an indication that the rate of turbulent mixing in the flame is of the same order of magnitude as the rate of evaporation of the largest droplets. The application of these results to sulfur burner design is discussed. 6 tables, 5 figures, and 28 references. E.S.

WILLIAMS, FORREST. Automatic control of sulfur level rotary burners. Pulp & Paper 23, no. 13: 80-1 (December, 1949).

A brief illustrated description of an automatic diaphragm-operated needle valve at the Camas mill of Crown Zellerbach is given, which is attached to the sulfur inlet line and keeps the sulfur level in the five burners uniform. A uniform sulfur level, in turn, insures uniform, high-test gas to the acid towers; sulfur trioxide formation is reduced, and unburned sulfur carry-over is avoided. A flow chart and hook-up diagram of the control installation are included. E.S.

MACHINERY—VATS

HORMANN, HERBERT. Sheet formation on the cylinder wire. Wochbl. Papierfabr. 77, no. 14: 387-90 (Oct. 31, 1949). [In German]

The author discusses the processes taking place during the formation of a sheet on the cylinder mold, difficulties encountered during operation, improvements in mold and vat constructions, and possibilities for increasing the rate of operation. 1 table and 2 diagrams. E.S.

MACHINERY—WIRES

KEIM, K. The wear of paper-machine wires; causes and means for reduction. Wochbl. Papierfabr. 77, no. 13: 359-63 (Oct. 15, 1949). [In German]

Mechanical abrasion of the phosphorus-bronze Fourdrinier wires is without doubt the main reason for premature wear; chemical corrosion, as a rule, plays only a subordinate role. Prolonged wire life is based on cautious handling of the wire during installation and faultless and frictionless operation of the entire wet end of the paper machine; high-speed operation tends to shorten wire life. The chief offenders in machine operation are the suction boxes, and precautions with regard to careful removal of sand from the stock, appropriate suction-box cover material, suction area, avoidance of an excessive vacuum, gradual increase of vacuum, etc. are listed. Attention is drawn to the damage which may be caused by single protruding weft or warp strands. Slack running of the wire is recommended, particularly in the case of very long wet ends; the tension should be just sufficient to prevent the slipping of the traveling wire or the formation of folds on its surface; stretch rolls bent in the middle are especially dangerous in this respect. Chemical corrosion is more liable to occur in slow-running machines where the constant contact of the metal with slightly acid water may be harmful. The occasional washing of the wire with dilute hydrochloric acid does not, as a rule, affect the wires adversely. The use of neutral aluminum sulfate and the testing of each new shipment for the presence of free sulfuric acid are recommended. The addition of sodium bisulfite or thiosulfate to the beater for brightening unbleached pulps may also have detrimental effects on the wire. The possibility of galvanic corrosion caused by stray electric current is mentioned. 2 tables. E.S.

MACHINERY—WOOD SPLITTERS

ENOKIHARA, SOGO. Design of pulp mill machinery. I. Splitters. J. Japan. Tech. Assoc. Pulp Paper Ind. 1, no. 2: 6-11 (October, 1947). [In Japanese; English summary]

In an investigation of the resistance of wood to splitting, 21 spruce (*Picea ajanensis*) logs of various diameters, roughly 600, 800, 1000, and 1160 mm. long, were split by a knife attached to a hydraulic ram; the cylinder pressure was recorded for each stage in the stroke of the ram. From the experimental data, values were calculated for the power requirement, the size of the flywheel, and the crankshaft diameter. 2 tables, 6 graphs, and 3 diagrams.
E.G.S.

MARKET RESEARCH

ANON. Meat pre-packaging: where does it stand? Modern Packaging 23, no. 4: 86-90, 188 (December, 1949).

This is a report of the survey conducted by the Production and Marketing Administration of the U. S. Department of Agriculture to ascertain the success of prepackaging. Ninety-seven stores scattered from coast to coast were used as a representative sample, and their practices, problems, sales volume, and customer reaction were carefully noted. In almost every case, meat sales had greatly increased since conversion to self service. Labor costs for handling a pound of meat averaged 4.3 cents for all stores, with higher costs in lower-volume stores being attributed to greater use and higher cost of skilled labor; no figures on the costs of packaging material are given. The major problems encountered concerned discoloration, unsatisfactory packaging techniques, and labor efficiency. Actual spoilage caused very little difficulty, and the package life of most meats was found to be from 48 to 72 hours, depending upon the type of package used, the method of handling, the amount of refrigeration, and the condition of the meat at the time of packaging. 3 tables and 7 illustrations.
J.A.B.

MODERN PACKAGING. Film-bagged apples. Modern Packaging 23, no. 4: 80-2 (December, 1949).

The experiment of the Washington State apple industry with prepackaging met with tremendous success last year, and researchers are now improving the mechanical filling operation. Pliofilm bags are used, with a paperboard glued-on header which slips over the end of a filling chute. The chute is equipped with a small gate at one end, which releases automatically as the chute is tipped, and a curved guard at the upper end, to prevent the fruit from falling to the floor. To speed up weighing, a split gate, functioning from mercury magnetic switches, is operated by a small magnet on the beam of the scales. The cost of prepackaging has thus far been greater than that of using the standard box, but further research is expected to remedy this. 6 illustrations.
J.A.B.

MATERIALS HANDLING

FROST, W. S. New methods of stacking bales for storage and shipping. I and II. Pulp Paper Mag. Can. 50, no. 9: 105-6; no. 12: 115-17 (August, November, 1949).

Two types of stacking conveyors for the handling of pressed pulp bales into storage or for loading into railway cars have been developed and patented by the Mathews Conveyor Co. Limited, Port Hope, Ont. In the first part, a vertical stacker-lowerer is described for applications where the pulp is

processed on an upper floor and stored or shipped on a lower floor; the second part deals with a horizontal type of stacker for mills where the pulp is processed and stored on the same floor. 6 illustrations. E.S.

MILL CONTROL

ANON. Paper stock control; a simple and effective system of inventory that can help you regulate your business. Paper & Twine J. 23, no. 10: 11, 21-3 (December, 1949).

As a means of improving managerial methods, it is suggested that a stock control system be used. A sample stock control card, in the form of a numerical graph, is shown and its use explained. This does not take the place of physical inventory or show dollar values, but it indicates sales movement of each item in units and prevents long and short stocks. It also serves as an aid in preparing a monthly profit-and-loss statement. J.A.B.

MOLDED PULP ARTICLES

HEIM, FRIEDRICH. Hollow articles from molded pulp. Wochbl. Papierfabr. 77, no. 12: 335-7 (Sept. 30, 1949). [In German]

This is essentially one section included in the following article; *cf.* abstract below. 3 diagrams. E.S.

HEIM, FR. Molded pulp articles, a many-sided, but little known branch of the paper industry. Allg. Papier-Rundschau no. 11: 545-9 (Sept. 30, 1949). [In German]

The author describes the procedures for making molded pulp articles (beer coasters, different hollow bodies, building board, etc.) with various types of semiautomatic or fully automatic machinery. 6 diagrams. E.S.

MUCILAGE

ANDERSON, ERNEST. Endosperm mucilages of legumes; occurrence and composition. Ind. Eng. Chem. 41, no. 12: 2887-90 (December, 1949).

In a search for mucilages similar to carob mucilage, seeds from 163 species of legumes were studied from 1941 to 1943. Three fourths of these were found to contain mucilage-yielding endosperms. By cutting across the mature seeds and observing the cut surface, the approximate amount, if any, of endosperm could be estimated. The mucilage was then dissolved in hot water, pressed through cloth, and the borax test made on it. The amount of endosperm in seeds of different species of legumes varied from zero to over 50% of the seed, and the percentage of soluble mucilage in some cases amounted to over 40% of the seed. The endosperm mucilages of legumes are galactomannans. Although other naturally occurring mucilages were examined, none had the properties of carob mucilage. The relative amounts of anhydromannose and anhydrogalactose are not the same in mucilages from different species of legumes, but vary from 81% anhydromannose to 16% anhydrogalactose in *Sophora japonica*, to as low as 59% anhydromannose to 38% anhydrogalactose in guar. Since the physical properties of all these endosperm mucilages resemble closely those of carob mucilage, any one of them might be used in place of carob mucilage if it could be manufactured at a suitable cost. Seeds of the legume guar yield over 40% mucilage which can be milled from the seed. Since this crop adds nitrogen to the soil and can be grown and harvested mechanically, guar seed appear to be a promising

industrial source of this mucilage. Tara seed occur in Lima, Peru, as a by-product of the exportation of tara pods for use in tanning. These, together with a number of other leguminous seeds from which endosperm mucilages can be milled form possible industrial sources of these mucilages. Beginning in 1943, the growth of guar in the southwestern United States was encouraged by General Mills, Inc., of Minneapolis, Minn. Soon afterward guar mucilage was placed on the market by this company. 5 tables and 26 references. E.S.

MULBERRY

OKADA, HAJIME, and SHOGENJI, TADASHI. Caustic soda cooking of kozo bast fibers. J. Japan. Tech. Assoc. Pulp Paper Ind. 2, no. 1: 5-11 (February, 1948). [In Japanese; English summary]

Refined kozo (paper mulberry) bast fibers were cooked at 100° C. with various quantities of caustic soda (1-15%, based on the weight of the fibers) for 0.5-5.0 hours. The waste liquor was subjected to conductometric and potentiometric titrations with 0.02 *N* solutions of hydrochloric acid and sodium hydroxide, respectively. The distribution of the original caustic soda (i.e., the alkali which reacted with the weak acidic organic substances in the liquor, the free hydroxide in the liquor, and the alkali retained in the pulp) was estimated from the analytical results. When the amount of caustic was insufficient, the free organic acid was also determined. The ratio of dissolved organic matter to combined alkali was calculated; the ratio was approximately equivalent to one hexose group per sodium hydroxide molecule, and was virtually independent of the cooking time and the amount of soda used. The acidic organic substances seemed to represent mixtures of acids, the dissociation constants of which range from 10^{-4}-10^{-6} to 10^{-8}-10^{-9}. 3 tables and 12 figures. E.G.S.

OCCUPATIONS—DISEASES AND HYGIENE

SCHWEISHEIMER, W. Protection from skin hazards. Paper Ind. 31, no. 9: 1074 (December, 1949).

Industrial skin trouble is more frequent than any other form of occupational disease and accounts for approximately 65-70% of all occupational diseases. The sensitivity of certain workers may be determined by patch tests, although in many instances it takes time and patience on the part of the patient and doctor to discover the actual cause of such troubles. The condition of the skin and skin changes associated with aging must also be taken into consideration. No cuts and sores of the skin of the hands and forearm should be neglected. Oversensitive workers may be compelled to give up certain jobs and accept others where chemicals or fumes are not involved. E.S.

PAPER—COATED

AREND, A. G. Improved coating materials for wrapping paper. Brit. Packer 11, no. 11: 26 (November, 1949).

Recent developments in coating materials include the use of rubber, shellac, plastics, and other organic substances to render the material moisture-proof; slip agents, such as double metal carboxylates, to offset undesirable tendencies; and the use of a selection of organic reagents in addition to paraffin, e.g., nitrocellulose, ethyl acetate, ethyl alcohol, wax-free damar, etc., to increase the strength of the heat-seal bond. An improved coating method consists of passing powdered resin through the flame of a gun at high velocity, thus depositing the projected particles as a continuous film on the paper. J.A.B.

PAPER—FILLERS

KOTTE [HANS] Fillers in paper. Allg. Papier-Rundschau no. 13: 636-9 (Oct. 30, 1949). [In German]

With brief reference to the structural two-sidedness of filled Fourdrinier papers, the author discusses the influence of the specific gravity and refractive index of the two main groups of fillers (kaolin, gypsum, talc, chalk, etc., on the one hand, and titanium dioxide, zinc sulfide, lithopone, etc., on the other) on the resulting whiteness and paper surface. If opacity and high whiteness are desired, the fillers of the second group will be selected, whereas a better closed sheet surface will result from the use of fillers in the first group. Filler retention depends upon many factors, including specific gravity, particle size and shape of fillers, beating degree and type of beating of pulps, etc.; it amounts roughly to 40-50% of the original charge and results from the combined effect of filtration and adsorption of the filler particles. Thicker papers will retain fillers better than thinner sheets; sizing also has a beneficial effect upon retention. With few exceptions, the addition of fillers results in softer, smoother, more porous papers of greater basis weight and lowered size resistance. The strength properties (tear, burst, and fold) decrease; only initial tear does not seem to be influenced. In conclusion, the author discusses the distribution of fillers inside the paper structure, a subject which has received little attention so far. The ratio of the amount of filler on the wire side to that on the felt side varies from 1 : 2 to 1 : 3, depending upon furnish, sizing, thickness of sheet, etc. Increased filler retention and higher machine speeds cause greater two-sidedness. The fibrous felt of the wire side (poor in fillers) absorbs printing inks far better than the felt side with the higher accumulation of filler particles. Ink printed on the wire side penetrates much deeper into the paper structure, causing show-through and possibly strike-through on the other side, whereas ink deposited on the felt side remains more or less confined to the surface and show-through is avoided. 7 figures and 3 footnotes.

E.S.

PAPER AND PULP INDUSTRY

ANON. Exports of wood-conversion products from Scandinavia. Norsk Skogind. 3, no. 11: 266-72 (November, 1949). [In Norwegian]

Statistical data for the exports of groundwood and chemical pulps, paper, and board from Finland, Norway, and Sweden to different countries during 1947 and 1948 (referred to 1937 as the basic year) are given. 2 tables, 3 block diagrams, and 27 pie charts. E.S.

ANON. Some remarks on the British export trade in paper and board. Brit. Paper: 24, 26, 28, 30, 32, 35-8 (Autumn, 1949). [In English, French, and Spanish]

The history and progress of the paper industry in Great Britain are given briefly, and the present situation with regard to foreign trade is discussed. A table is given to indicate Britain's contribution to the world's paper requirements in the form of exports, and another lists her principal customers and their prewar purchases. Exports include all types of papers, particularly the more expensive qualities, and recently a substantial trade in coated papers and boards has been built up as a result of improved sales and technical research techniques. 2 tables. J.A.B.

FISCHER, EMIL. South American paper autarchy? Wochbl.

Papierfabr. 77, no. 16: 453-4 (Nov. 30, 1949). [In German]

The present status of the paper industry of the different South American states is discussed; statistical figures are included. E.S.

SATO, TAKESHI. The development of the cement bag industry in Germany. J. Japan. Tech. Assoc. Pulp Paper Ind. 1, no. 2: 12-16 (October, 1947). [In Japanese; English summary]

The cement-bag industry had its beginning in Germany 40 or 50 years ago. The development of this industry in the United States stimulated the improvement of German cement-bag manufacturing. Initially, the bags were made from kraft paper imported from northern Europe; because of import controls and the increased demand for paper bags, a shortage of domestic kraft paper resulted. The quality of the paper deteriorated with the partial substitution of sulfite pulp. The expansion of the Japanese cement-bag industry is encouraged. E.G.S.

PAPER AND PULP INDUSTRY—EDUCATION

MUNDS, EBERHARDT. The development of the educational and research institutes for paper manufacture and cellulose chemistry at the Institute of Technology at Darmstadt since the end of the war. Wochbl. Papierfabr. 77, no. 16: 443-4 (Nov. 30, 1949). [In German]

The present status of the reconstructed buildings at Darmstadt, the activities, and the curricula are described. E.S.

SHALLCROSS, RUTH E. An experiment in the teaching of economics to science graduates. J. Chem. Education 26, no. 12: 671-3 (December, 1949).

For three years The Institute of Paper Chemistry has been experimenting to determine how much and what kind of economics should be taught to its students who have obtained the B.A. or B.S. degree in chemistry or chemical engineering without so much, in some cases, as an elementary course in economics. There was no pattern in the academic world which could be followed. The author describes the development of a method which consists in assigning an economic problem in the third year of graduate study after the training in pulp- and papermaking has been completed. The goal of teaching economics at the Institute is not to train economists, but to open the minds of the students to economic considerations which may spell the success or failure of a technical process. The problem method has been found to have more merit for the specific needs of Institute students than any other plan. E.S.

PAPER AND PULP MILLS

ANON. The Bengal Paper Mill Company Limited, Raniganj. Indian Pulp and Paper 4, no. 4: 175, 181 (October, 1949).

Since it began production in 1892 with one paper machine, the Bengal Paper Mill Co., Ltd., at Raniganj has become one of the most important paper manufacturing units in India. It was here that a satisfactory type of bamboo crusher was devised and perfected. At present, a complete new plant for the pulping of sabai grass is being erected, in addition to a new recovery plant with a high-temperature spray furnace capable of generating high-pressure steam entirely from waste heat. A complete rag-handling plant has

also been installed, and the steam generating plant is being expanded. The mill manufactures printing, writing, and tissue papers. J.A.B.

ANON. Better equipment makes better paper; Gilbert mill improves. Pulp & Paper 23, no. 13: 54, 56 (December, 1949).

An illustrated description of the modernization program at the Gilbert Paper Co. at Menasha, Wis., is given, which among other features, involved the rebuilding of two of its three paper machines at the wet end, new stock-preparation and auxiliary equipment, improvements in the boiler plant, etc. The mill produces 40 tons of quality papers per day. E.S.

ANON. Oxford modernizes; many new additions at Rumford. Pulp & Paper 23, no. 13: 32, 34, 36, 38, 40 (December, 1949).

Following a brief history of the development of the book-paper mill of the Oxford Paper Co. at Rumford, Me., the recent long-term modernization program, now reaching its final phases, is described. For many years, Rumford has been a soda and sulfite operation; its present equipment, in addition to sulfite, is designed for either soda or kraft, and it may change entirely from soda to kraft in the future. Some of the new installations include six shop-welded steel vertical digesters, one of which is clad with stainless steel on the inside; a new Combustion Engineering recovery unit and waste-heat boiler; a new building for a new Rice Barton paper machine; the revamping of three older machines; a new building for the supercalenders, rewinders, and roll finishing and shipping; three Jones Majestic jordans; two Trimbey metering machines; etc. A detailed description of the new and revamped paper machines is given. Two of the machines are equipped with a machine-coating process. The present daily capacity of the mill is about 600 tons of book, text, writing, and coated papers per day. The company also owns the Oxford Miami Paper Co. at West Carrollton, Ohio, with a daily output of 125 tons. Numerous illustrations. E.S.

BECKER, F. G. L. World's first all-continuous mill; Algerian plant producing quality papers. World's Paper Trade Rev. 132, no. 16: 1072, 1074 (Oct. 20, 1949).

Reference is made to the new mill constructed by Compagnie Nord-Africaine de Cellulose, Baba-Ali, at Algiers, which has started operations quite recently. Esparto and cereal straw are the raw materials; the mill represents the first completely continuous fine pulp and paper mill. All the Celdecor-Pomilio pulp-mill equipment was designed or specified by Cellulose Development Corporation Ltd. in England. There are two paper machines, one for wrappings, and the other for fine papers. The plant installations were supplied from Algiers, Great Britain, France, and South Africa. 2 illustrations. E.S.

Mz. G. Haindl paper mills 100 years old. Wochbl. Papierfabr. 77, no. 11: 311-13 (Sept. 15, 1949). [In German]

The paper mills of G. Haindl in Bavaria celebrated their 100th anniversary on August 6, 1949. A brief history of the mills and their owners is given; the chief products of the mills are printing papers and newsprint. E.S.

PAPER MANUFACTURE

HILL, E. L. Pulp and paper. Repts. Progress Applied Chem. 33: 322-37 (1948); *cf.* B.I.P.C. 19: 31.

A review is presented of the developments in 1948 in the pulp and paper industry under the headings: raw materials, pulp production, papermaking, and testing and analysis. 109 references. E.S.

PAPER SIZING

PATTISON, ROBERT W. Tub and surface sizing and related problems. Paper Trade J. 129, no. 20: 83 (Nov. 17, 1949).

The essential difference between tub and surface sizing lies in the method in which the web passes through the size press, whereby surface sizing under otherwise identical conditions will pick up about 25% less sizing solution, because the time of contact is shorter. To counteract this, the temperature and the solids content of the sizing solution must be increased. Surface sizing has been developed for machines operating in excess of 250 ft./min. The choice of material for tub or surface sizing depends on the ultimate use and ranges from 100% hide or bone glue to 100% starch gum at different concentrations. Useful hints for Plastometer readings and crown of the rolls in the size press are given. E.S.

PAPER SPECIALTIES

ANON. Know your papers. Paper & Twine J. 22, no. 11: 9, 11, 36-7; no. 12: 10, 28-9; 23, no. 1: 10, 34-5; no. 2: 9-10; no. 3: 16-17, 19, 21-2; no. 4: 12, 28-30; no. 5: 11, 18-19; no. 6: 12, 14, 16; no. 7: 11-12, 42; no. 8: 14, 16-17; no. 9: 15-16, 27; no. 10: 12, 14-15 (January-December, 1949).

This is a series of articles which, in dictionary form, briefly describe the various types of paper and board. The series is not as yet complete; thus far, subjects from abrasive papers through jute tissue have been covered. J.A.B.

ANON. Milk in paper packages. Forest Echoes 9, no. 12: 10-14 (December, 1949).

The method of production of factory-sealed, single-service containers for milk, employed by the American Can Co., is described, and the advantages of this container over the re-use type are pointed out. Sanitation is emphasized, and repeated heat and chemical treatments, which bacteria are unable to survive, are carried out in the manufacturing process. Closure gaps are tightly sealed in the paraffin bath, the seals being broken immediately before filling, and then quickly resealed. The paperboard base used in this carton is pure virgin pulp, which is treated by either the sulfate or the sulfite process and bleached with chlorine. 6 illustrations. J.A.B.

ANON. Printers' paper problems. VII and VIII. Paper and ink. Indian Print & Paper 14, no. 57: 29; no. 59: 28 (October, 1948, April, 1949); *cf.* B.I.P.C. 19: 186.

The printing properties required of ordinary newsprint, mechanical machine-finish and supercalendered printings, pure printings (made from pure chemical pulps without the addition of groundwood pulps), and all kinds of wrapping papers, including glassine and greaseproof, tissues and manifolds, vegetable parchment, and cellophane, are reviewed briefly. Suitable types of ink are mentioned. E.S.

ANON. "Slippage" principle of protection. Packaging Parade 17, no. 203: 76 (December, 1949).

A new low-cost paper cushioning material, constructed like a multiwall paper bag and consisting of multiple layers of inexpensive chipboard that has been crinkled after the paper was made, then partially laminated to allow slippage, has been developed by Fibleco Illinois Corp., Chicago, Ill. This material, called Sofpak, is useful as a protective wrapper, as well as an interior cushioning medium; its outer sheet is made of multiwall bag stock, which will take extreme scuffing or abrasion without tearing. 3 illustrations. J.A.B.

FACHKUNDE-KARTEI. Duplicating paper. Allg. Papier-Rundschau no. 11: 554 (Sept. 30, 1949). [In German]

The raw materials and colors of duplicating papers are described; directions for their use and suitable utensils for writing are listed. This is chart W B 5 of a series. E.S.

FACHKUNDE-KARTEI. Permanent stencils and stencil inks. Allg. Papier-Rundschau no. 14: 690 (Nov. 15, 1949). [In German]

The manufacture, raw materials, handling, applications, and storage of permanent stencils and suitable stencil inks are described. This is chart W B 8 of a series. E.S.

FORSTNER, G. E., and FULLER, C. H. F. Packaging of prepared food. Chemistry & Industry [68] no. 47: 803-5 (Nov. 19, 1949).

The author discusses the packaging of different types of prepared foods from the aspects of hygiene, prevention of mechanical damage, and protection against deterioration, the last-mentioned factor receiving particular attention. The most important consideration here is the effect of exchange of moisture, and to be able to select the appropriate packing, the percentage equilibrium humidity (E.H.) of the article to be packed must be known. Examples of the effects of the E.H. of bread, fruit pies, fancy iced cakes, flour, tea, sugar confectionary, chocolate, baking powder, frozen food, and ground roast coffee on the wrapper are given and individual use requirements pointed out. The limitations of "moistureproof" cellophane, waxed papers and glassines, Pliofilm, metal foils, and laminated papers are mentioned, and the fact is stressed that, however good the wrapping material, its quality will be of no avail if the package itself is not perfectly sealed. Prevention of loss of fat or oil, and protection against oxidative effects, transmission of odors, and contamination by the odor of the packaging material itself (solvents in cellulose films, cardboard from waste board, paraffin or printing ink residues, adhesives, etc.) also receive brief consideration. E.S.

GRANT, JULIUS. Developments in the paper industry. World's Paper Trade Rev. 132, no. 16: 1032, 1035-6 (Oct. 20, 1949).

The author discusses the principal paper properties associated with surface texture, ink penetration into and through the paper, opacity, setoff, etc., which are of interest to printer and ink manufacturer, the problems to which they give rise, and recent developments in paper manufacture which have helped to solve some of these problems. Reference is made to the effect of the beating machine, tackle, and beating procedure, and the selection of a suitable furnish on the resulting surface properties of the sheet, suppression of wire marks by flattened knuckles of the Fourdrinier-wire strands, the combination of two wire sides of two webs to one sheet, so that only felt sides are used for printing, calendering, coating, etc. 4 photomicrographs. E.S.

GRANT, JULIUS. Vegetable parchment—a unique wrapping material. Brit. Paper: 40, 42 (Autumn, 1949).

After a brief history of animal and imitation parchment, the author describes the vegetable parchment which is used today in the wrapping of moist, fatty materials. This is made by treating paper with sulfuric acid, which tends to dissolve cellulose, and arresting the process at the point where the fibrous structure has disappeared but the web has not yet broken. The resulting sheet has a very high resistance to penetration by oils, fats, waxes, and water, and a particularly high strength when in the wet state. A committee of the British Standards Institution is at present compiling a specification for this product. J.A.B.

PAPER SALES. Matched tableware . . . for retail sales all around the calendar. Paper Sales 9, no. 12: 16-19, 37-8 (December, 1949).

Available now in a large variety of colors and designs, matched tableware has sales appeal not only in the summer, but every season in the year. These sets consist of paper plates, cups, dessert dishes, table cover, napkins, and coasters, or some combination of these items, printed or decorated with a matching pattern. The inks used are entirely harmless and usually will not rub or wash off. In question-and-answer form, information concerning the construction, sizes, and patterns of the various items is given. 1 table and 4 illustrations. J.A.B.

PARAMOUNT PAPER PRODUCTS COMPANY, *Omaha, Nebr.* Prepackaging tapes. Fibre Containers 34, no. 11: 106 (November, 1949.

Brief reference is made to prepackage tapes, an adaptation of the gummed paper tape, for banding bananas, celery, egg cartons, and similar items. Another development is sale tape to be used on shipping-cart handles, shelves, counters, or island displays; no special equipment or skill is required in its use. Both tapes are printed in bright colors and stock designs and are available in rolls in any quantity for immediate delivery. 1 illustration. E.S.

PARTICLE SIZE

FRÉCHETTE, V. D., and SEPHTON, H. I. A method of particle size determination by means of the microscope. Am. Ceram. Soc. Bull. 28, no. 12: 496-7 (December, 1949).

A method of particle-size determination in the subsieve range was developed to facilitate measurement with no loss of the precision inherent in the microscopic method. Features of the technique include dispersion of the sample in warm raw Canada balsam, classification of the individual particles with respect to Martin's diameter by means of an external scale which is visible through the camera lucida (Abbé drawing camera), and examination of the mount at three successive magnifications. Either a micrometer-driven stage or an internal standard is used to reduce the respective particle counts to the same basis as percentage of the total sample. The data may be represented in the form of distribution curves and may be calculated to yield specific surface and the several average diameters. 3 footnotes and 2 figures. E.S.

PHOTOGRAPHY

BRITISH PRINTER. A photographic record of paper making. Brit. Printer 62, no. 369: 24-6 (November-December, 1949).

Reference is made to a comprehensive pictorial record of the process of papermaking produced in the mills of the Wiggins Teape organization. The pictures are clear and factual views of machinery combined with people and give the suggestion of continuous accomplishment; they are not dependent upon dramatic viewpoints, exaggerated lighting effects, or artistic diffusion. No specific plans for the use of these pictures have yet been made, although they will undoubtedly find many applications, particularly in the educational and advertising fields. The present article deals primarily with the quality of the photographs and the technique of taking this type of picture. 6 illustrations. E.S.

PHYSICAL TESTING—PAPER

COTTRALL, LESLIE G. How can we select the right paper for the job? Brit. Paper: 7-10, 12-14, 16, 18, 20-2, 51 (Autumn, 1949). [In English, French, and Spanish]

The author points out the progress which has been made during the last 20 years in the methods of evaluation of the properties of paper, making it possible to formulate specifications for paper to suit each individual requirement. The desirable characteristics of paper for printing and coating are discussed, and some of the instruments used to test these papers are mentioned, such as the smoothness tester, opacimeter, brightness tester, stiffness tester, glossmeter, and tearing tester. The importance of ascertaining the true requirements of a paper for a particular use, without overspecifying or including irrelevant demands, is emphasized. J.A.B.

UNDERHAY, G. F. Paper testing methods. World's Paper Trade Rev. 132, no. 17: 1089-90, 1092 (Oct. 27, 1949).

The present organization, composition, liaison with other countries, and work to date of the Paper Testing Committee of the Paper Makers' Association of Great Britain and Ireland are reviewed briefly. E.S.

PHYSICAL TESTING—PAPER—SIZE RESISTANCE

NOLL, AUGUST. New dry indicators for the daylight observation of the water permeability of papers. Wochbl. Papierfabr. 77, no. 16: 445-6 (Nov. 30, 1949). [In German] *cf.* B.I.P.C. 7: 431-2.

Since quartz lamps are not readily available in Germany at present, the author has developed a number of very sensitive dry indicators for testing the size resistance of papers in ordinary daylight by the flotation technique previously described by Noll and Preiss. The sensitivity of the new indicators was considerably improved by the addition of wetting agents. The preparation and applications of ten different dyestuff-wetting agent combinations of approximately equal sensitivity are described which, on penetration of moisture, yield either a blood-red, dark blue, or violet color. The use of lighter color shades is not recommended. The present indicators are applicable only to white or light-colored papers, because the contrast is not sufficiently pronounced on darker sheets. In such cases, the quartz-lamp indication with fluorescent dyes remains the best testing procedure. 2 tables. E.S.

PHYSICAL TESTING—PAPER—STIFFNESS

LIEBERT, ERHARD. Testing the 90°-flexibility of packaging material. Das Papier 3, no. 19/20: 382-6 (October, 1949). [In German]

The author describes a method and instrument for measuring the flexural

properties and springback angle of packaging materials. The test specimen is clamped between flat blocks so that a portion extends beyond the block. This protruding portion is bent through an angle of 90° about an edge of known radius of curvature and released. The apparatus includes provision for measuring the angle of return. Using a series of radii of curvature for the edge about which the specimen is bent, a plot of springback angle versus radius of curvature can be made. On this chart, the author plots a straight line joining the points ($r = 0.01$ mm., $\varphi = 90°$) and ($r = 100$ mm., $\varphi = 0°$) and divides it uniformly into 100 parts. This is the springback value or coefficient scale. The coefficient for a particular sample is given by the point at which the curve of the sample intersects this scale. The instrument also permits the measurement of the springback moment. The author describes the instrument and its operation in some detail and presents various data and graphs to compare his values with those of other testing devices. He obtained good correlation between his springback coefficient and flexural resistance by Clark's method (*cf.* B.I.P.C. 16: 151), but no correlation between his springback moment and Clark's flexural resistance. He therefore concludes that the springback moment is a measure of an entirely different property from the flexural resistance by Clark's method. 1 table, 9 figures, and 7 references. O.H.O.

PHYSICAL TESTING—PAPER—THICKNESS

GUSTAFSSON, CHARLEY, and NORDMAN, LARS. On the basis weight, thickness and apparent specific gravity of paper. Finnish Paper Timber J. 31, no. 19: 353-6 (Oct. 15, 1949). [In English]

A study was made of the relationship between basis weight and the thickness of handmade sheets in order to determine the factors responsible for the observed increase in the apparent specific gravity of such sheets when the basis weight is increased. Handsheets prepared from a number of different pulps were used in this investigation. A straight-line relationship was obtained between the thickness and the basis weight, but it was observed that the curve, upon extrapolation to zero basis weight, failed to pass through the origin and intercepted the thickness axis; the point of interception depended upon the number of sheets measured simultaneously. This indicated that there was an error in the thickness determination attributable to the roughness of the paper surface. It is shown that the reciprocal of the slope of the curve (basis weight *vs.* thickness) may be considered a measure of the internal apparent specific gravity of the sheet. 8 tables, 1 graph, and 3 references. W.A.W.

PHYSICAL TESTING—PAPER—VAPOR TRANSMISSION

NOLL, AUGUST. The determination of the water-vapor permeability of papers, foils, and fabrics. Wochbl. Papierfabr. 77, no. 10: 287-90 (Aug. 31, 1949). [In German] *cf.* B.I.P.C. 15: 294.

This is an extended reprint of the previous article. 2 figures and 3 tables. E.S.

PIGMENTS

WILLETS, WILLIAM R. Titanium. Paper Mill News 72, no. 51: 42, 44 (Dec. 17, 1949).

The mining of ilmenite, the preparation of titanium pigments from the ore, and their many applications to paper and board for opacifying, brightening, and whitening are reviewed. 7 illustrations. E.S.

PLASTIC FILMS—TESTING

BOOR, LADISLAV. Some notes on the effect of testing machines on the tensile properties of plastic films. ASTM Bull. no. 162: TP215-21 (December, 1949).

In the evaluation of plastic and elastomeric films for Army use, the simple measurements of tensile strength and elongation by conventional methods (Schopper, Thwing-Albert, Scott, and similar testers) are not adequate. The A.S.T.M. Committee D-20 on Plastics Method D 882-46 T is suitable for testing films of nitrocellulose, cellulose acetate, regenerated cellulose, and most vinyl polymers, but leaves much to be desired in revealing the stress-strain behavior of new film materials with radically different properties. In this case, the whole pattern of relationships from zero load to final failure is necessary to judge the suitability of different films for the wide variety of uses. Data are presented on various tension-testing methods which reveal the different patterns of behavior, with particular reference to three recent machines embodying new features of loading and load-elongation measurements (Olsen electromatic, Instron, and Baldwin MTE testing machines). All three utilize dynamometer systems involving negligible movement of the upper jaws. These machines promise great improvements in the evaluation of the stress-strain behavior of various polymeric materials and structures made therefrom. 1 table, 21 diagrams, and 6 references. E.S.

PLASTIC FILMS (NONCELLULOSIC)

RYAN, WILLIAM. Sealing of polyethylene. Modern Packaging 23, no. 4: 133-7 (December, 1949).

A variety of commercial equipment is now available for the heat sealing or welding of polyethylene in its various forms and thicknesses. The methods of sealing discussed are: conventional heat sealing, band-type sealing, impulse sealing, high-frequency dielectric sealing, bead sealing, and welding. The method used is determined by the particular application and production requirements. Polyethylene has many unique characteristics (*cf.* B.I.P.C. 20: 34) which make it valuable to the packaging industry, and the improved facilities for handling, together with increased availability of the material, are extending its usefulness. 8 illustrations and 9 footnotes. J.A.B.

PLASTICS

CRAWFORD, J. W. C., *and others.* Plastics. Repts. Progress Applied Chem. 33: 338-76 (1948); *cf.* B.I.P.C. 19: 36-7.

Members of the Plastics Group of the Society of Chemical Industry review the developments in 1948 in plastics as follows: Crawford, J. W. C. Polymerization products (including polyethylene, polystyrene, polyvinyl chloride, fluorine-containing polymers, acrylic polymers, cross-linked polymers, miscellaneous polymers, and process studies, 82 references), p. 338-51; Whitehouse, A. A. K. Polycondensation products (including phenolic plastics, furan, thiophene, urea-formaldehyde, and melamine-formaldehyde resins, polyesters, polyamides, and silicones, 135 references), p. 352-66; and Parkin, T. N. Plastics from natural polymers (including cellulose derivatives suitable for plastics, cellulose derivative plastics: manufacture and use, plasticizers for cellulose derivatives, and protein plastics, 109 references), p. 367-76. E.S.

POLYSACCHARIDES

DVONCH, WILLIAM, and WHISTLER, ROY L. Water-soluble poly-

saccharides of sweet corn. J. Biol. Chem. 181, no. 2: 889-95 (December, 1949).

The two water-soluble polysaccharides of sweet corn were studied and were found to be similar in their properties. Both of them are similar to amylopectin or glycogen. It is suggested that they be considered as highly branched amylopectins. 19 references. E.S.

FREUDENBERG, KARL. Polysaccharides. FIAT Rev. German Sci., 1939-1946. Biochemistry, Part III: 139-58 (1948). [In German]

Literature published in Germany during the war years on the structure, properties, etc., of starch, glycogen, cellulose, glucose and hydrochloric acid, fructosans, and other polysaccharides is reviewed. 125 references. E.S.

PRINTING AND PRINTER'S INK

ANON. Process "builds" makeready into printing plates. Shears 67, no. 684: 18 (December, 1949).

The Bishop pre-make-ready process introduces varying printing levels into the surface of a printing plate and eliminates up to three fifths of down-time for make-ready. This process prepares electrotype printing plates for the press by "building" make-ready into electrotypes, obviating the necessity for overlaying or underlaying or other make-ready after the plates are on the press. Type and middletones are kept at the travel line of the press, with solids .002 above, and highlights and vignettes .002 below. The patented process is described briefly; it is attracting the attention of folding-box manufacturers. 1 diagram. J.A.B.

DE GORTER, B. The principles and possibilities of diazo-copying processes. J. Documentation (Aslib) 5, no. 1: 1-11 (June, 1949).

The author discusses improved methods for copying documents (any visual record of information) by diazo-copying processes, reviewing in turn the dry (Ozalid) and semiwet processes, reflectography, screen reflectography, the Retocee process, and new machines constructed by Van der Grinten in Holland (K.3 printer, S.2 apparatus, U. apparatus, and E.50 machine). 8 figures and 16 references. E.S.

HEALEY, A. C. A report on common ink drying problems . . . Am. Ink Maker 27, no. 12: 26-8, 51 (December, 1949).

The author discusses problems connected with poor drying of ink, chalking, nonuniform drying, excessive drier proportion, drying on the press, dried film appearance, drying in the can, crystallizing, odor, atmospheric effects, and storage. Remedies are listed in many cases; the use of new types of inks in conjunction with specially constructed printing presses can overcome many of the difficulties encountered with the conventional types of inks. 7 references. E.S.

PARSONS, BASIL M. Roll leaf stamping, embossing and die-cutting on a platen press. Modern Lithography 17, no. 12: 35-6, 87, 89, 91, 93 (December, 1949).

The author discusses the possibilities of the roll-leaf stamping process, a dry printing process, for unusual printing work and outlines the necessary equipment, dies, and make-ready procedures; directions for embossing with heat are also given. Roll leaf comes in a variety of 28 standard colors, with

gold and silver the most popular; boxboard for folding and setup boxes, and light and heavy paper stocks can be handled. Plastic materials, wood, fiber, cloth, hard rubber, and any resisting material can also be stamped with roll leaf in various colors, but there are special machines required for printing on articles of this kind. The average printer will be chiefly interested in stamping book and catalog covers, menu covers, fancy covers, specialties, fancy box wrappers, diaries, and advertising booklets, including beautiful announcements, programs, and advertising displays. In conclusion, steel-rule die cutting on platen presses is considered briefly. E.S.

THOMA, PAUL J. Take the heat off . . . Am. Ink Maker 27, no. 11: 25-6, 63 (November, 1949).

Time Inc. used over 200,000 tons of paper in 1948 for the production of *Life* and *Time;* the normal furnish is 50% sulfite and 50% groundwood pulp. The prime paper costs amount to more than 50% of the total expenditure for the production of the two publications. In 1948, the company had 20,527 web breaks on the printing presses resulting from paper defects. This corresponds approximately to 7000 hours downtime, each hour costing an average of $217.00 (including paper spoilage and actual press charges). When heat-set inks are used, it has been found that a large proportion of the web breaks came after the paper went through the first ink drier. In checking the physical characteristics of the paper before and after going through the press, it was found that tensile and Mullen strengths were not appreciably altered; tearing strength, on the other hand, degraded rather badly, from 23 to 15 in the machine direction, and from 28 to 21 in the cross-machine direction. Although it cannot be definitely decided how many web breaks result solely from loss in tear strength caused by degradation in the ink driers, there is good reason to estimate that the figure amounts to at least 25% of all breaks. Since the ink-drying equipment definitely degrades the strength of the paper, the high sulfite percentage has to be used in the furnish to keep the web from breaking, although the running speeds are lower than for ordinary newsprint, the furnish of which usually consists of less than 20% sulfite and over 80% groundwood. The article is essentially a plea to inkmakers to develop an ink that can be dried without heat. E.S.

PULP MANUFACTURE

GRANT, JULIUS. Pulp and paper manufacture as a chemical industry. World's Paper Trade Rev. 132, no. 19: Tech. Sup. 89-92 (Nov. 10, 1949).

Following a brief description of the different commercial chemical pulping processes and bleaching methods, the by-products from the sulfite, sulfate, and soda processes are discussed, with particular emphasis on the problem of profitable disposal of sulfite waste liquor. 5 references. E.S.

JAYME, GEORG. Chemical pulp. FIAT Rev. German Sci., 1939-1946. Preparative Organic Chemistry, Part III: 49-174 (1948). [In German]

Literature published in Germany during the war years is reviewed under the following subheadings: chemistry, morphology, and suitability of fibrous raw materials; cooking methods; bleaching of pulps; purification of pulps; strength properties of pulps; chemical testing of pulps; mill control; and appendix. 334 references. E.S.

WURZ, OTTO. Alkaline and groundwood pulping processes.

Wochbl. Papierfabr. 77, no. 11: 313-15 (Sept. 15, 1949). [In German]

The author presents a brief review of alkaline processes, the chlorination process, and developments in wood grinding and groundwood bleaching. E.S.

PURIFIED WOOD FIBER

DR. F. Purification of pulps. Wochbl. Papierfabr. 77, no. 9: 259-60 (Aug. 15, 1949). [In German]

Recent patented German pulp purification methods are reviewed. E.S.

REFRACTORIES

BRASHARES, C. A. Refractory practice in modern kraft mills. Paper Trade J. 129, no. 23: 40-2 (Dec. 8, 1949); Paper Ind. 31, no. 9: 1122-3 (December, 1949).

The author outlines briefly the service conditions involved and the refractories used in the rotary lime-sludge kilns, recovery boilers, power boilers, and in their respective auxiliary equipment, with some reference to the use of acidproof brick in the various kinds of tank linings. 1 table and 3 figures. E.S.

RESEARCH

MERKEL, P. Wood research in the service of pulp and paper supplies. Wochbl. Papierfabr. 77, no. 16: 447-8 (Nov. 30, 1949). [In German]

Suggestions are given for German research programs in the pulp, paper, and fiberboard industries, with the goal of increasing yields from available raw materials. E.S.

RESEARCH LABORATORIES

BORGIN, KARL. Cellulose research in the United States. Norsk Skogind. 3, no. 11: 276-82 (November, 1949). [In Norwegian; English summary]

The author reviews the cellulose research carried out in the United States at (1) the universities and colleges, and (2) independent, (3) government, and (4) industrial research laboratories. 10 illustrations and 4 references. E.S.

JAHN, EDWIN C. Wood research at the N.Y. State College of Forestry. Tappi 32, no. 12: 94-6A (December, 1949).

The author outlines the research organization, facilities, and activities of the New York State College of Forestry. E.S.

RUBBER

LAWRIE, J. P. Rubber in packaging. Brit. Packer 11, no. 11: 27-9, 45 (November, 1949).

Rubber and its derivatives offer an increasingly wide range of uses in the field of packaging, as illustrated by specific examples. Rubber latex, valuable to the paper and board industries because of its waterproofing properties, may be added to paper by inclusion in the beater, and the resultant product

is stronger, more pliable, and more durable. The amount of rubber added may be varied to suit particular requirements. 6 illustrations. J.A.B.

SAFETY

BROWN, S. C. Are we attacking the accident problem the right way? Pulp Paper Mag. Can. 50, no. 12: 181, 183, 185 (November, 1949).

The author outlines a different method of safety approach which is not based on a book with many safety rules and calls for the disciplining of a worker who breaks one. The human element always being in evidence, the aim should be to make this element co-operate and not to antagonize the worker when he did not follow a rule. The man should be made subconsciously safety-minded by training him properly in his work and appealing to his reasoning as to whether or not he is doing his work in a really safe manner. E.S.

TUTEN, ALVIN. Safety—crossing the imaginary line. Paper Trade J. 129, no. 24: 50, 52-3 (Dec. 15, 1949); Paper Ind. 31, no. 9: 1120-2 (December, 1949); Pulp Paper Mag. Can. 50, no. 13: 152, 154, 156 (December, 1949).

The accident frequency is usually highest in mills which have no directed safety program. However, a safety director's work can only be successful if he has the whole-hearted support of management and labor. The author describes the methods by which the necessary co-operation is obtained at the North Carolina Pulp Co. E.S.

SALESMEN AND SALESMANSHIP

ANON. Overlooked these specialties? Paper & Twine J. 23, no. 9: 12-13, 24-5 (November, 1949).

The paper salesman is reminded of the countless opportunities for the sale of paper specialties in every conceivable type of business establishment. J.A.B.

ANON. Popcorn means business for theaters . . . and paper salesmen. Paper Sales 9, no. 12: 11-12, 38, 40 (December, 1949).

The paper salesman is reminded that there are numerous opportunities for the sale of paper products in the growing popcorn industry. Illustrations of different popcorn boxes and bags are included. J.A.B.

HERRICK, DUDLEY. Service helps sell the nursery. Paper Sales 9, no. 12: 13, 40, 42, 44 (December, 1949).

A paper salesman in a rich agricultural area shows how, by acquiring a complete understanding of the nurseryman's problems and goals, he may help him increase product protection and reduce costs, at the same time selling him a profitable variety of paper goods. J.A.B.

PAPER SALES. Hotels need papers to save work and satisfy patrons. Paper Sales 9, no. 12: 14-15, 38 (December, 1949).

Interviews with hotel executives have revealed that those who strive to give their customers the best service possible are very receptive to suggestions from the paper salesman as to products which will save time and expense or improve the quality of their service. A partial list of the paper needs of a hotel is included here. J.A.B.

SEMI-CHEMICAL PULPING PROCESS

CHIDESTER, G. H. Semichemical pulping. Paper Trade J. 129, no. 20: 84-9 (Nov. 17, 1949).

A mild chemical treatment of wood chips followed by mechanical refining to complete the fiber separation produces semichemical pulps high in yield and strength. The procedure is adaptable to a wide variety of wood species and wood wastes. The pulp strengths obtained are particularly high for hardwoods. The influence of the chemical treatment with acid, neutral, and alkaline liquors and bleaching on the yield and properties of semichemical pulp are discussed. The well-established use of semichemical pulp in the manufacture of corrugating board and other products and the indication in experimental trials of the suitability of semichemical pulps for many other kinds of paper are described. The high yield of pulp obtained by the semichemical processes and their adaptability to many wood species not now used extensively should serve as incentives for even more extensive commercial applications. 3 tables, 7 figures, and 7 references. E.S.

U. S. FOREST PRODUCTS LABORATORY, *Madison, Wis.* Report on Conference on Semichemical Pulping. Fibre Containers 34, no. 11: 66-74 (November, 1949).

Under the chairmanship of W. E. Byron Baker a meeting of the Committee on Coordination of Research of the American Pulp and Paper Association was held at the Forest Products Laboratory on May 17, 1949, for discussing the present status and possibilities of semichemical pulping, particularly of hardwoods, to conserve resources of softwoods and broaden the supply base of the industry. A digest of the discussions and conclusions is presented, covering pulping chemicals and chemical action, influence of wood species and pulping variables on yields and properties, influence of pulp yield on pulp properties, steam and water cooking, miscellaneous high-yield processes, mechanical fiberizing, bleaching and purification of semichemical pulps, papermaking with semichemical pulps, plant design, and neutral sulfite pulping of straw. 3 tables and 1 diagram. E.S.

SETUP BOXES

ANON. Boosting the thermometer. Modern Packaging 23, no. 4: 106-7, 192 (December, 1949).

The G. J. Tagliabue Corp., Newark, N.J., has replaced its individual packages for thermometers with safer, more economical, and more convenient boxes holding three or six thermometers. A removable platform extends the length of the box, with self-forming steps at each end; two U-shaped vertical spacers with die-cut elliptical holes are inserted from beneath the platform and protrude through two pairs of lateral slots. Thermometers are passed though aligned holes in the double uprights formed by the spacers and are supported by the platform. Lateral motion and longitudinal thrust are prevented by the spacers and the buffer steps. With six to a box, the package cost per thermometer is 48.7% less than previously, and packaging time is reported to be 38% faster. 7 illustrations. J.A.B.

SHIPPING CONTAINERS

AMATEL, HAROLD, and BRANN, ALBERT. Lighter light bulbs. Modern Packaging 23, no. 4: 116-18 (December, 1949).

The history of light-bulb packaging is traced from the time when bulbs were wrapped in cotton wadding and individual paper cartons, packed in wooden boxes lined with two-inch layers of excelsior, and then suspended

by means of spiral bed springs inside larger wooden boxes, to the recently developed three-bulb carton introduced by Westinghouse. Only two of the bulbs are enclosed in individual open-end corrugated cartons, while the third is placed between them and protected by them. The shipping case now in use is made of Fourdrinier kraft, with a 0.009 corrugating medium. 6 illustrations. J.A.B.

ANON. Corrugated and "consumer glass" invade "carry-home" field. Am. Boxmaker 38, no. 12: 16-7 (December, 1949).

The first carry-home corrugated container for glassware has been developed by the Hinde & Dauch Paper Co., Sandusky, Ohio, for the Dunbar Glass Corp. of Dunbar, W.Va. A one-piece container is fitted with a one-piece liner, which provides a horizontal shelf for six tumblers, while the bottom contains a pitcher. The two rows of glasses are divided by a vertical partition forming part of the liner, and the slotted inner flaps, when tucked in, enclose each tumbler in its own individual cell. Extensions of the outer flaps have die-cut handle grips to provide a carrying device. The cartons are shipped flat, and no taping is used in the construction; the manufacturer's joint is stapled. They lend well to stacking and display and serve as handy re-use containers for the consumer. 4 illustrations. J.A.B.

ANON. Divisible beer case. Packaging Parade 17, no. 203: 41 (December, 1949).

Two new multiple unit packages have recently been introduced by Brewing Corporation of America, Cleveland, Ohio. One is the Ty-Pak divisible case, consisting of two units of 12 bottles, held together by corrugated strips at each end. The other is the Alpak-Autovidor six-bottle carrier, manufactured by American Coating Mills, Elkhart, Ind., which is fully enclosed, the handle being reached through a slot in the top. This carton is of one-piece construction, made of 30-point bleached chipboard. 2 illustrations. J.A.B.

ANON. Nails in fibre boxes. Fibre Containers 34, no. 11: 40, 42 (November, 1949); *cf.* B.I.P.C. 20: 201.

The development of a corrugated fiber nail box made under the Belsinger patents follows closely the successful development of the bolt and nut box previously described. The nail box consists of a central or inner tube made of one piece, and two reinforcing ends, each made of three pieces (tube, pad, and design-style tray), so that the container is made of seven pieces of board. It holds the standard 100 pounds of nails which are fed from special filling machines. The containers are jogged or vibrated in the operation to get a tight fill; after closing, they are secured with two wire ties. At present shipping tests with the new boxes are made to receive customer and consumer approval. 2 illustrations. E.S.

ANON. Packing bottled drinks for private buyers. Paper Container 61, no. 6: 145, 147 (December, 1949).

Methods for packing one, two, three, or bulk quantities of bottled liquids in fiberboard containers with interior corrugated protective pads, neck protection, and suitable wrappers or sleeves are described. 2 illustrations. E.S.

CALLAHAN, T. P. Container development from marketing standpoint. Chem. Eng. News 27, no. 48: 3565-6 (Nov. 28, 1949).

Three fundamentals control the suitability of containers used in the chemical industry: safety, appearance, and economy. Efforts should always be

made to ascertain the methods of use and handling employed by the consumer in the distribution of the product within his plant. The determination of the proper packing weight is very essential to the consumer, as well as the cost of the container. Freight on containers which carry the same rate as the product must be taken into consideration, and lightness of the container, consistent with safety, becomes an important factor. The subsitution of fiberboard for wood has been a marked advancement in the packaging of dry chemical products. Marking and labeling are other very necessary functions from the consumer's standpoint and close attention to this phase of packaging leads to good consumer relations. However, it must always be borne in mind that producers are selling not containers, but products packed within the container. Although the producer has the opportunity to select the container of his choice, he must always keep in mind the reaction of the consumer to whom the product is shipped. The container must never become the cause for a consumer's discontinuation of purchases. E.S.

LAHEY, R. W. Check your chances to cut cost of packaging. Chem. Eng. 56, no. 12: 94-6 (December, 1949).

Possible economies in packaging and shipping are reviewed, including improved filling and conveying machinery, the substitution of mechanized equipment for manual operations, proper maintenance of weighing equipment, the replacement of oversize containers with ones of the correct size, the proper estimate of the cost of expendable pallets, and up-to-date information on the latest developments and improvements in containers, such as new linings for steel drums, incorporation of polyethylene in the construction of textile or paper shipping bags, polyethylene bottles, and new linings for fiber drums. If applicable, shipping in bulk is nearly always less expensive than in any form of containers. 3 illustrations. E.S.

UNCLES, R. F., and LAHEY, R. W. Package development and product research. Chem. Eng. News 27, no. 49: 3630-1, 3673 (Dec. 5, 1949).

Packaging development must be properly co-ordinated with new product research, so that not only the commercial container will be tailored to meet the requirements of the new product, but small sample containers for introducing it to the trade will be just as carefully selected. Packaging should be studied concurrently with process development if costly errors resulting from hurried selection of containers are to be avoided. To conduct such an investigation with maximum efficiency requires a well organized packaging engineering group, operating as a staff function, which provides means for centralization of all pertinent information, evaluation of test data, and decisive action based on that evaluation. This group should be headed by somebody with an extensive knowledge of types and limitations of containers, packaging machinery, materials handling, and government and other regulations affecting all shipments. The packaging organization must be flexible to take advantage of the knowledge and experience of all other departments; it must keep in close contact with the research group and be fully informed of the progress or pertinent changes in the development program. The obligation of the packaging group should extend beyond the routine testing and selection of containers; fundamental research should be encouraged and its members should keep abreast of all phases of product development and market potentialities. E.S.

SHIPPING CONTAINERS—FIBER DRUMS

BERGSTROM, H. A. Fiber drums. Chem. Eng. News 27, no. 48: 3566-8 (Nov. 28, 1949).

The fiber drum industry, originating about the turn of the century, made slow progress the first 25 years. Early drums were crudely made from poor materials. During the twenties, two developments made the modern fiber drum possible: the development of machinery to wind drum sidewalls convolutely and the introduction of southern kraft linerboard. In the thirties, improvements followed rapidly. These included better basic designs plus methods of fabricating protective barriers and linings into the drum. The rapidly growing chemical industry has continuously sought improved shipping containers for economically handling extremely hygroscopic and corrosive chemicals. Since the war, some of the major fiber drum developments have been: a very water vapor-resistant barrier of aluminum foil laminated between two sheets of kraft using a hot-melt resin laminant, fabricated into the side wall and heading to form an integral part of the drum; the combination of a fiber drum plus a plastic (such as polyethylene or saran) inner bag; special constructed drums for shipping corrosive and hazardous chemicals such as sodium hydrosulfite and monochloroacetic acid; new chemically resistant inner linings and coatings; and more durable and water-resistant exterior protective and decorative coatings. E.S.

SHIPPING CONTAINERS—MULTIWALL BAGS

LEROY, ROBERT B. Multiwall paper sacks. Chem. Eng. News 27, no. 48: 3562-4 (Nov. 28, 1949).

Multiwall paper shipping sacks are custom-made, because they can render greater service through low-cost specialization. Since each product packaged has its own requirements, it becomes virtually mandatory to manufacture according to individual specifications. Factors of major importance in the final selection of bag type and size, the number and nature of bag walls, and the degree of slack required include: quality and nature of the product to be packaged, amount and type of protection required, capacity unit preferred, volume of material to be packaged within a specified time, methods and machinery used in packaging and handling, available storage conditions, type or types of shipment involved and distances to be traveled, loading practices, compliance with government regulations, over-all costs, and human physical limitations. The sack is virtually a combination of three to six bags in one, arranged in tubular form, so that each carries its proportionate share of the weight of the product. About a dozen types of paper are commonly used, including natural kraft, asphalt-laminated and -impregnated kraft, the former sometimes with sisal reinforcements, highly sized and wet-strength papers, kraft treated with waxes, glassine, separating paper (usually a clay-coated kraft), bleached and dyed krafts, and parchment. The three types of bags in general commercial use are the open-mouth, the valve, and the open-corner bag. The seams and closures must be equivalent or superior in strength to the bag walls. Adhesives are used for bonding the side seams, bottoms are either pasted or tape-sewn, and top closures are many and varied, including sewing, tape-sewing, wire- or rope-tying, stapling, pasting, and taping. Bag users have a wide selection of filling and handling devices with which requirements can be met; multiwall bags lend themselves especially to palletizing operations. However, it must be understood that the best made bag is of little value unless it is properly filled, weighed, and closed. In conclusion, useful suggestions for good multiwall-bag packaging are given. Through proper control of variables it is possible to package even the costliest of chemicals in multiwall paper shipping sacks. E.S.

SHIPPING CONTAINERS—PALLETIZING

MACARTHUR, J. E. Palletized expendable tier pack. Fibre Containers 34, no. 11: 64-5 (November, 1949).

The author describes the successful application and failure of palletized loads to the automotive business. There are three general types of expendable pallets currently in use: containers glued onto a slip sheet, with special trucks to pull the load onto the truck for handling; wooden or paper pallets with assembled interior partitions, containers, tubes, or trays, used for fragile articles; and wooden pallets with a comparatively weak superstructure of half-slotted containers and a cover or tray covering each layer. The selection of any type must be based upon a consideration of all factors involved; cost is usually the greatest single factor, after it is established that the product will arrive in good condition. Because of the size of the pack, standard testing equipment is not adequate, and testing procedures for such loads have not yet been fully developed. Experiments at General Motors are mentioned for showing the relationship between laboratory tests and actual conditions; they illustrate the importance of humidity, type of flute, glue, banding, partition pieces, etc. Aside from improper handling and faulty package design, humidity is a constant source of danger. Only boards which give greatest strength under high humidity conditions ("A" flute) are used at present. E.S.

SODIUM PEROXIDE

ZABEL, HERMAN W. Metallic sodium, its production and use. Chem. Inds. 65, no. 5: 714-16 (November, 1949).

The two new installations for the manufacture of metallic sodium (Ethyl Corp. at Baton Rouge, La., recently placed into full operation, and National Distillers Chemical Corp., at Ashtabula, Ohio, to start in April, 1950) will add some 50% to the industry's production capacity of about 140 million lb./year. All domestic sodium is made by electrolysis of sodium chloride fused to metallic sodium and chlorine in the Downs cell, the successor to the Castner cell. Its relatively high price (18.5 cents per pound in drums) provides definite limitations on its use; its unique properties, on the other hand, enable it to find many applications. Its main use is for the production of tetraethyl lead, which will consume about 120 million lb./year in 1950; other large-scale uses include the manufacture of fatty alcohols, sodium cyanide, sodium peroxide, and sodium hydride. In addition, there are several smaller outlets, such as the preparation of dyestuffs, production of potassium metal, manufacture of aircraft exhaust valves, etc. As more of the new metal becomes available, the demand for sodium peroxide for the bleaching of groundwood pulp and for deinking is expected to double in 1951, as compared with the 7 million lb./year used for this purpose in 1948. Sodium peroxide is at present used by at least 12 mills; hydrogen peroxide can replace it as a bleach, but is more expensive. 4 tables and 2 illustrations. E.S.

STARCH

CORRAN, J. W. Starch. Repts. Progress Applied Chem. 33: 492-503 (1948); *cf.* B.I.P.C. 19: 48.

The author reviews recent developments in the field of starches under the subheadings: manufacture, sources of starch, special and modified starches, starch ethers and esters, analysis, chemical properties, physical properties, and saccharification. 82 references. E.S.

HOPKINS, R. H., and JELINEK, B. Action of β-amylase on amylose. Nature 164, no. 4179: 955-6 (Dec. 3, 1949).

This paper is a rebuttal of Kerr's paper (see abstract below). A potato amylose fission product having a mean chain length of 20 glucose units was

freed of long and short chain-length material by treatment with cyclohexanol and dialysis, respectively. The reaction rate constants of this fractionated degraded amylose and the parent amylose were approximately the same. This indicates that little or no difference exists between the rates of β-amylase hydrolysis of long and short chains which may be present in amylose. The unconverted residues left by β-amylolysis of the short chain product to 50 and 70% gave red iodine colors with absorption values which were only 60 and 30%, respectively, of those given by the original short-chain product. These absorption values should have been 100% on the basis of Kerr's "single-chain" theory of β-amylase hydrolysis. It appears, therefore, that the β-amylase hydrolysis of amylose is a first-order reaction, until the shortest chains disappear and, thereafter, the molar concentration decreases and with it, the reaction velocity. 5 references. J.W.S.

KERR, RALPH W. Action of beta amylase on amylose. Nature 164, no. 4174: 757-9 (Oct. 29, 1949).

Arguments are presented which favor those theories of β-amylase hydrolysis of amylose presented by Cleveland and Kerr (*cf.* Cereal Chem. 25: 133-9 [1948]) and Swanson and Cori (*cf.* B.I.P.C. 18: 471-2) rather than the theory of Hopkins, Jelinek, and Harrison (*cf.* B.I.P.C. 19: 200). The author agrees that the hydrolysis of amylose by β-amylase is not a first-order reaction, except under certain limiting conditions. It appears that the rate constant is determined by the number of nonaldehydic end groups per unit volume presented by the amylose fraction. Examination of unconverted residues at various stages of hydrolysis of corn amylose of $D.P._n$ 455 showed that the chain-length value had not materially decreased. It appears, therefore, that after making contact, the enzyme hydrolyzes an amylose molecule completely to maltose before beginning attack on another molecule. It follows that the time for actual hydrolysis of an amylose molecule is extremely short, compared with the time required for the enzyme and amylose to diffuse and make contact. Thus, under the usual conditions of a low ratio of enzyme to amylose, the reaction rate constant would not be constant, but would continually decrease. 13 references. J.W.S.

STORAGE BATTERIES

ANON. Maintenance of industrial truck batteries. Paper Ind. 31, no. 9: 1077-8 (December, 1949); *cf.* B.I.P.C. 19: 506; 20: 44.

Essentially the same information is presented as was included in the two previous articles. E.S.

STRAW

CELLULOSE DEVELOPMENT CORPORATION, LTD. New British process extracts cellulose pulp from straw. Can. Chem. Process Inds. 33, no. 11: 961 (November, 1949); *cf.* B.I.P.C. 18: 585-6.

Brief reference is made to the continuous Celdecor-Pomilio process. 3 illustrations. E.S.

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. *Fibrous Agricultural Residues Committee.* Fibrous Agricultural Residues meeting. Tappi 32, no. 12: 80A, 82A, 84-93A (December, 1949).

This is the complete report of the meeting held at the Northern Regional Research Laboratory, Peoria, Ill., on November 15-16, 1948. It includes the

following papers and their discussions, listed here by author and title only: Roethe, H. E. [Outline of structure and work of the Laboratory] p. 80A, 82A; Adair, G. Method of straw procurement used by the Alton Boxboard Company, p. 82A; Belford, J. A. A farmer's market for straw, p. 82A, 84A; Lyon, H. The effect of educational campaign on the availability and condition of straw, p. 84-5A; Miesen, A. R. Straw supply and water development in North Dakota, p. 85-6A; Wisman. Development in straw collection and baling equipment and methods, p. 86A; Bush, V. E. Some practical aspects of straw pulping, p. 88-9A; Lamb, Harry L. Straw pulp and stock preparation, p. 89-90A; and Wilson, N. F. Single-fill vs. multifill cooking of straw, p. 90-1A. E.S.

STREAM POLLUTION

ANON. Liquid wastes: new ways to crack a common problem. Modern Ind. 18, no. 6: 44-8 (December, 1949).

Methods are suggested for decreasing wastes in industrial plants and for reclaiming some of the materials that go down the drain, thereby cutting treatment costs and perhaps realizing a moderate return, in addition to meeting the sanitation requirements of the community. A chart is included, indicating the steps to be taken in the investigation of a waste disposal problem, and sources of information on pollution control are listed. 14 illustrations. J.A.B.

LACOSTE, RICHARD. Another fallacy "busted"—black bass thrive in black liquor. Southern Pulp Paper Manuf. 12, no. 12: 55 (December, 1949).

This is a popular account of the fact that black bass lived and grew in a black liquor pond in Louisiana. No technical details are given. E.S.

NÖTHLICH, F. Investigations on the composition and changes in a sewage mixed with waste waters from the manufacture of chemical pulp. Gesundh.-Ing. 68: 170- (1947); Dept. Sci. Ind. Research (Brit.) Water Pollution Research, Summary Current Lit. 21, no. 8: 188-9 (August, 1948). [In German; English abstract. Abstract only available]

The author describes investigations on the composition and on the effect, in the presence and absence of domestic sewage, of filtered and unfiltered waste waters from the manufacture of chemical pulp, especially sulfite waste liquor, on the process of self-purification in river and sea water. The results are given of determinations of the effect of waste waters from the manufacture of pulp by the sulfite process, unfiltered and after filtration through soil, on the content of dissolved oxygen absorbed by permanganate, and the contents of combined, free, and aggressive carbon dioxide in waters of different salinities. The results showed that both filtered and unfiltered waste waters increased the oxygen demand of water to which they were added and decreased its capacity for self-purification. Flocculation and sedimentation of suspended matter were greater the higher the salinity of the water and were also affected by the presence of domestic sewage, by filtration of the waste waters through soil, and by the initial content of the dissolved oxygen in the water. The effect of deposits of sludge on the oxygen demand of the water of a stream, especially at times of low flow, are discussed. E.S.

PAESSLER, A. H., and HEDGEPETH, L. L. Stream pollution from

pulp mills in Virginia; applicability of the B.O.D. test. Tappi 32, no. 12: 559-62; discussion: 562 (December, 1949).

The State Water Control Law is discussed briefly with a statement of its purpose and an explanation of the provisions it makes for controlling pollution. The status of municipal and industrial pollution is presented by means of maps showing the number of persons discharging treated and untreated sewage into each river basin, as well as the number and type of each industry discharging wastes. The pulp mill-pollution problem is discussed. Use of the B.O.D. test is shown as one of a number of useful tools in determining the extent of this problem. It is stressed that factors other than B.O.D. are of equal or greater importance. The method of accomplishing pollution abatement does not usually concern regulatory agencies, but it is a matter of considerable concern to the mills. An example of the regulatory agency's concept of a typical pulp mill-pollution problem is shown. 4 figures and 2 references. E.S.

SOUTHGATE, B. A. Sanitation and water purification. Repts. Progress Applied Chem. 33: 652-69 (1948).

The author reviews the literature of 1947-48 on the subject under the main headings: water, sewage, trade-waste waters, and effects of pollution. The section on trade-waste waters includes a one-page discussion on pulp and paper mills wastes. 116 references. E.S.

VAN HORN, WILLIS M. Stream pollution abatement studies in the pulp and paper industry. Trans. Wisconsin Acad. Sci. 39: 105-14 (1949).

Emphasizing the essentiality of water to the pulp and paper industry, the author discusses the problems arising from chemical (acid and alkaline) pulping, deinking, and paper machine wastes in the use of this water, with special reference to research activities and organizations for combating water pollution from pulp and paper mills, particularly in Wisconsin. 19 references. E.S.

WINGET, RUSSELL L. Stream pollution problems in the southeastern United States. Paper Trade J. 129, no. 22: 33-5 (Dec. 1, 1949); Southern Pulp Paper Manuf. 13, no. 1: 28-9 (January, 1950); *cf.* B.I.P.C. 19: 276-7.

The author discusses the aims and purposes of the National Council for Stream Improvement, the specific waste disposal problems of the pulp and paper industry in the Southeast, and the state stream pollution control as it affects the mills in this area. E.S.

SULFATE MILLS

BAKER, R. E. Weyerhaeuser-Longview kraft mill. Paper Trade J. 129, no. 23: 37-40 (Dec. 8, 1949).

A profusely illustrated description of the installations in the new kraft mill, the second Weyerhaeuser unit at Longview, is given. The mill is designed to produce a high-quality bleached pulp; Douglas fir from chipped sawmill and plywood-mill leftovers and from prelogged wood is the principal source of raw material. E.S.

SULFITE PROCESS

RICHTER, GEORGE A. Certain factors that influence delignification

in acid sulphite pulping. Tappi 32, no. 12: 553-9 (December, 1949).

The author deals with some of the factors that play important roles in determining the ease or the difficulty of delignification with bisulfites and with sulfurous acid itself. It has long been recognized that in acid sulfite pulping ease of delignification can be greatly influenced by conditions that exist before maximum temperatures are reached. Not only can early digestion history interfere seriously with removal of lignin during pulping, but in many cases the lignin remaining in the pulp product becomes more difficult to eliminate in subsequent bleach stages. The influence of initial high temperatures in the absence of sulfites or high free sulfurous acid solutions is particularly detrimental to subsequent pulping unless such high temperature treatment has been preceded by a sulfonation step. Under some conditions of pretreatment, the lignin is rendered almost wholly inert to later removal by sulfurous acid or by sulfite. On the other hand, when sulfonation is particularly favored in a prestep, a second-stage digestion that allows additional sulfonation or sulfurous acid hydrolysis or both will result in almost complete delignification. The results of this investigation also show that an effective presulfonation can be followed with a high-temperature aqueous treatment of a sort that will in itself ordinarily cause the lignin to become unreactive, without appreciable interference in a third-stage pulping with sulfite solutions. It is believed that the experimental findings explain to a large extent some of the experiences that are encountered in orthodox pulping procedures. 17 tables. E.S.

SULFITE PROCESS—CHEMIPULP

MURPHY, E. A. Engineered instrumentation for Chemipulp process. Paper Trade J. 129, no. 20: 89-91 (Nov. 17, 1949).

Following a brief outline of the principles of the Chemipulp hot acid cooking and recovery system, the instrumentation for a Chemipulp-KC direct-cook digester and high- and low-pressure accumulators is outlined. Other hookups and modifications of the system than those described are possible. The process results in increased yields and savings in steam and sulfur. 3 figures. E.S.

SULFUR

ANON. Sulfur from refinery gas. Chem. Inds. 65, no. 6: 898 (December, 1949).

Brief reference is made to the new sulfur recovery plant of the Hancock Chemical Co. at Long Beach, Calif., the first plant in this country to recover sulfur from the hydrogen sulfide in waste petroleum refinery gases; the gases are scrubbed with diethanolamine in towers at the refineries, and the solution is piped to the Hancock plant where it is steam-stripped. The present output is about 42 tons of elemental sulfur per day; the molten product is tank-trucked to the near-by Stauffer Chemical Co. plant for conversion to sulfuric acid. 3 illustrations. E.S.

SWELLING AND HYDRATION

KASBEKAR, G. S. Swelling of cellulose in neutral salts; factors governing high swelling. Indian Pulp and Paper 4, no. 4: 161-3, 183 (October, 1949); *cf.* B.I.P.C. 19: 809.

The swelling of cellulose in neutral salts is governed by the physical and chemical properties of the solutions employed, e.g., the size of the solute particles, their degree of hydration, and viscosity. The properties of solu-

tions which cause maximum swelling in zinc chloride, zinc thiocyanate, and calcium thiocyanate are summarized in table form. The final swelling is accompanied, in most cases, by a preferential absorption of either the solvent or the solute, depending upon whether the solution gives high or low swelling, and the process ends with complete solution of the cellulose. The deswollen material from salt solutions exhibits a decrease in dye absorption and a slight increase in fluidity and copper number, indicating that a certain amount of hydrolysis has taken place. 2 tables and 8 references. J.A.B.

TALL OIL

YOUNG, C. B. F., EICK, GEORGE H., and WARMACK, WILLIAM. Tall oil. Soap Sanit. Chemicals 25, no. 12: 40-3, 147 (December, 1949).

Following a brief description of the production of tall oil as a by-product of the sulfate process and of its chemical composition, its uses in soap (including brown laundry and liquid soaps) are reviewed; formulas are given. Tall oil is the cheapest source of fatty acids in the world. Physically, it is different today from the oil marketed at the beginning of the war. As a result of a wide research and development program, refined tall oils are now available which are noncrystallizing, light in color, less odoriferous, and uniform in consistency from tank car to tank car. Present research calls for the elimination of all sulfur compounds and removal of the color bodies to make it more stable and attractive to the insecticide and disinfectant industry. 10 references. E.S.

TEXTILE INDUSTRY AND FABRICS

NEALE, S. M. Cellulose and textile chemistry. Repts. Progress Applied Chem. 33: 309-21 (1948); *cf.* B.I.P.C. 19: 52.

The author reviews recent developments in the chemistry of cellulose fibers, protein fibers, fully synthetic fibers, paper, bleaching, dyeing, and finishing, and in physical testing, chiefly during the years 1947 and 1948. 78 references. E.S.

TEXTILE INDUSTRY AND FABRICS—FIREPROOFING

REID, J. DAVID, and MAZZENO, LAURENCE W., JR. Preparation and properties of cellulose phosphates. Ind. Eng. Chem. 41, no. 12: 2828-31 (December, 1949).

Various methods of phosphorylating cellulosic materials have been investigated. A method using phosphorus oxychloride and pyridine as the phosphorylating agent has been adopted, and a number of cellulosic products containing phosphorus and chlorine have been prepared and analyzed. Cloth phosphorylated by the above process is substantially flame- and glowproof but suffers so great a loss in tensile strength that it is impractical for the production of garments. Much of this degradation is avoided in preparation of samples by the urea-phosphoric acid method of phosphorylation. Degradation is very slight in these products. Incorporation of cellulose phosphates into a successful flameproofing formula reduces the afterglow, but an excessive amount is required to achieve complete extinction of the afterglow. Data are included giving the effect of change of time, temperature, and molar ratio on the phosphorylation of cellulose, hydroxyethylcellulose, ethylcellulose, and cellulose acetate. 2 tables and 21 references. E.S.

REID, J. DAVID, MAZZENO, LAURENCE W., JR., and BURAS, ED-

MUND M., JR. Composition of two types of cellulose phosphates. Ind. Eng. Chem. 41, no. 12: 2831-4 (December, 1949).

The authors describe further experiments conducted in an effort to elucidate the structure of phosphates of cellulose prepared by the commercial urea phosphate method of preparing flameproofed cloth and by the pyridine-phosphorus oxychloride method. By electrometric titration it is shown that the combined phosphorus in cellulose phosphate prepared by the treatment of cellulose with urea phosphate is probably entirely in the form of a mono-substituted phosphate ester. There is no evidence of the formation of other, more highly substituted products. The structure of cellulose phosphate prepared by the treatment of cellulose with a phosphorus oxychloride-pyridine mixture is similar, except that, in a typical sample, approximately 23% of the phosphorus can be accounted for as a disubstituted phosphate ester. The chlorine also present in this product is probably attached directly to the carbons of the glucose units. A small amount of nitrogen is found in typical samples, presumably caused by pyridine. 2 tables, 3 figures, and 11 references. E.S.

TURPENTINE

SNOW, ALBERT G., JR. Research on the improvement of turpentine practices. Econ. Botany 3, no. 4: 375-94 (October-December, 1949).

Following a brief historical introduction, the author describes the recent efforts to modernize the old turpentine industry by improving extraction techniques through chemical or fungus stimulants (*cf.* B.I.P.C. 20: 244); selection, breeding, and propagation of high-yielding turpentine pines; and engineering research on equipment used in woods operations. Turpentining can continue to pay dividends only if the results of modern research are put into practice. 2 tables, 12 figures, and 17 references. E.S.

WAGES

MCCAUGHEY, I. H. Effect of the increase in the minimum wage. Shears 67, no. 684: 20, 22 (December, 1949).

A chart is presented which illustrates the effect that the wage increase to a 75-cent minimum, on January 25, 1950, will have on plants paying less than 75 cents. By means of a chart such as this, a plant owner or manager may calculate the percentage wage increase necessary to meet the new legal minimum; if the wage policy of the company is to maintain the ratio of spread through the various classifications, the percentages will vary, decreasing toward the higher wage brackets. 1 graph. J.A.B.

WASTE LIQUOR

KOBE, KENNETH A., and MCCORMACK, EDWARD J. Viscosity of pulping waste liquors. Ind. Eng. Chem. 41, no. 12: 2847-8 (December, 1949).

In the wood pulp industry the sulfite, sulfate, or soda process may be used for the pulping process to give a cellulose fiber. In the alkaline processes it is customary to concentrate the liquor and burn it to recover the soda base. In the sulfite process it is becoming necessary to carry out some processing prior to disposal. For all of these waste liquors a knowledge of their viscosities is necessary for calculations involving pumping costs, pressure drop in fluid flow, heat transfer coefficients, and cost of concentrating the liquor. Because the viscosity of the waste liquor is largely caused by the dissolved

sugars and colloidal lignin molecule it was hoped that some general relation might exist among these three liquors so that the viscosity of all could be represented by one set of curves with an accuracy sufficient for most engineering calculations, as was previously found to be the case with the specific heats of these liquors (*cf.* B.I.P.C. 8: 221-2; 9: 283-4). 3 tables, 2 figures, and 6 references. E.S.

WATER AND WATER TREATMENT

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. Specification for chemical composition of water for manufacture of soda and sulphate pulps. Tappi 32, no. 12: 64A (December, 1949).

The text of TAPPI Tentative Standard E 603 s-49 is given, which should be considered as a guide in determining the quality of water to be used in the manufacture of alkaline pulps; it does not apply to the subsequent manufacture of papers from these pulps. One table listing the maximum amounts of permissible impurities in parts per million is included. E.S.

WATER-MARKS

SPORHAN-KREMPEL, LORE. The aeronaut Blanchard and the papermakers of Swabia. Wochbl. Papierfabr. 77, no. 12: 341 (Sept. 30, 1949). [In German]

Reference is made to different Swabian watermarks showing a Montgolfier balloon in addition to the initials of the papermaker in a number of papers dating from the end of the 18th and beginning of the 19th century. E.S.

WAXES

PADGETT, FRED W., and PADGETT, JOHN W. Petroleum waxes extend specialty uses. Chem. Inds. 65, no. 6: 905-6, 908, 910, 912, 914 (December, 1949).

A discussion is given of the types of waxes produced in American refineries; the differences between micro and paraffin waxes; their manufacture, testing, and evaluation; formulations; emulsions; principal uses; and economic advantages. Some of the applications include laminating agents, coatings, waterproofing agents, polishes, cosmetics, inks, modifiers for other waxes, carbon paper, impregnating compounds, sizes, leather dressings, etc. Although large quantities are used without modification, the trend is toward formulation. Hence, an understanding of the grades and properties of available waxes is essential for the intelligent selection of a suitable type. 1 table and 3 illustrations. E.S.

WEIGHING MACHINERY

HOUSTON, JOHN DENTON. Automatic continuous weighing in the pulp mill. Paper Trade J. 129, no. 22: 38 (Dec. 1, 1949).

Examples are given of different applications (sulfur, salt cake, wood chips, hogged fuel, etc.) of continuous weighing scales which automatically weigh, indicate, integrate, and totalize the tonnage without interruption of flow, as the materials are transported on belt conveyors into or out of storage, into process, etc. 1 diagram. E.S.

WOOD

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NA-

TIONS. Forest products—Situation and outlook, 1949/50. Unasylva 3, no. 6: 207-15 (November-December, 1949).

Statistical data are presented for the world output of sawed lumber, plywood, pitprops, railway sleepers (ties), wood pulp and pulp products, and fiberboards, each of the larger countries' exports and imports being considered separately. A small over-all decline in forest output is forecast for 1950, as compared with the 1948 level, but a recovery is expected in 1951. On the whole, prices have taken a downward trend, particularly in the wood-pulp and paper industries; in the United States, this was the result of a saturated pulp market in 1948 and a slackening demand; the mills apparently bought only enough pulp to meet their immediate needs. The falling prices, along with the increased availability of raw materials from the Scandinavian countries, are of advantage to the pulp and paper manufacturing of Western Europe, which is at present below capacity. 1 map, 4 tables, and 2 graphs. J.A.B.

McEWEN, JOHN M. Procurement of West Coast pulpwoods. Tappi 32, no. 12: 544-6 (December, 1949).

Pulp mills on the West Coast have operated principally on hemlock logs with smaller amounts of white fir and Sitka spruce. The present trend is for fuller utilization of sound wood that was formerly logging or lumber-mill waste. Sulfate mills are turning to Douglas fir, but its heartwood cannot be satisfactorily pulped by the sulfite process. West Coast logging in a sustained yield operation involves a clear cutting of successive areas, not a selective cutting. Seed blocks are left to provide natural reforestation. Considerable pulpwood is made available by prelogging and relogging. Prelogging consists of cutting the small trees in an area with light equipment before they are damaged by the main operation. Another type of prelogging which may contribute more pulpwood in the future is the thinning of second-growth stands to give the remaining trees more room to develop. Relogging is the salvaging of logging wastes with light equipment. Some mills have to provide woodroom facilities for barking and chipping whole logs, cord wood, and slabs, and for handling clear mill trimmings. E.S.

STAMM, A. J. What is a plastic? Plastics [U.S.] 9, no. 2: 22-3 (November, 1949).

Although wood is not truly a plastic in its own right, some forms of modified wood and materials obtained from wood fall in the conventionally accepted field of plastics or impinge on the industry in so many ways that the manufacturer of plastics should take cognizance of its possibilities. Examples of resin-treated wood, laminates, and chemicals derived from wood are discussed briefly. E.S.

WOOD—EXTRACTIVES

GRIPENBERG, JARL. The constituents of the wood of *Thuja occidentalis* L. Acta Chem. Scand. 3, no. 7: 782 (1949). [In English]

The occurrence of thujaplicins in samples of *Thuja occidentalis* was studied by the same technique as previously employed with *Thuja plicata* (*cf.* B.I.P.C. 19: 511). The extract yielded 0.08% α- and 0.008% γ-thujaplicin and only traces of thujic acid. No β-thujaplicin could be detected, although its presence in small amounts is possible. 2 references. E.S.

LINDSTEDT, GÖSTA. Constituents of pine heartwood. IX-XIII. Acta Chem. Scand. 3, no. 7: 755-72 (1949). [In English] *cf.* B.I.P.C. 16: 270.

IX. The heartwood of *Pinus montana* Mill, p. 755-8. The techniques used in extracting the woods and fractionating the extracts are outlined. The wood contained 0.08% 5,7-dihydroxyflavanone ("pinocembrin"), 0.05% pinosylvin, and 0.1% of its monomethyl ether. 2 references. X. The heartwood of *Pinus contorta* var. *latifolia* S. Wats, p. 759-62. The wood contained 3.8% ether extract from which were isolated 0.08% "membrane" substances, 0.02% pinocembrin, 0.003% pinobanksin, 0.01% pinosylvin, and 0.004% pinosylvin monomethyl ether. The wood also contained 0.06% L-arabinose. 3 references. XI. The heartwood of *Pinus radiata* D. Don, p. 763-6. The wood yielded about 8% ether-soluble extractives, 0.06% membrane substances, 0.08% (each) pinobanksin, pinocembrin, and pinosylvin monomethyl ether, as well as a very small amount of arabinose. 3 references. XII. The heartwood of *Pinus ponderosa* Dougl., p. 767-9. The wood yielded 2.7% ether extractives, and gave 0.08% membrane substances, 0.002% pinocembrin, 0.01%-0.03% pinosylvin, and 0.4% of the pinosylvin monomethyl ether, as well as 0.01% arabinose. Full methods for identifying the extractives are given. 1 reference. XIII. The heartwood of *Pinus Jeffreyi* Balf., p. 770-2. The wood yielded 1.7% ether extractives, and gave 0.05% membrane substances, 0.03% pinocembrin, 0.05% of the pinosylvin monomethyl ether, and 0.1% arabinose. 4 references. L.E.W.

WOOD—SACCHARIFICATION

SAEMAN, JEROME F. Kinetics of wood hydrolysis and the decomposition of sugars in dilute acids at high temperatures. Holzforschung 4, no. 1: 1-14 (1949). [In German; English summary] *cf.* B.I.P.C. 15: 226.

This is a translation of the previous reference. L.E.W.

WOOD FLOUR

BOWEN, PERRY P. Manufacture and use of wood flour. Plastics 9, no. 2: 14, 21, 26 (November, 1949).

Wood flour may be obtained by grinding sawdust in stone mills, roller mills, hammer mills, beater mills, or attrition mills, each machine producing a different end product. Technical specifications concerning color, bulk or density, screen analysis, absorption value, fibrous structure, and resin and moisture content have been established, which necessitate careful selection of raw material. The amount of wood flour used as a filler in different compositions varies from 5 to 70% of the total, depending upon the finish, strength, and other qualities desired. A partial list of binders which may be used with wood flour is given, as well as a list of the principal uses of the products. Manufacturers of wood flour are warned against dust explosions and fires, which are a constant danger in grinding mills. J.A.B.

WOOD ROOM

DEFIEUX, O. T. Pulpwood handling at Camas. Paper Trade J. 129, no. 25: 25-8 (Dec. 22, 1949); Pulp & Paper 23, no. 13: 44, 46-8, 50, 52 (December, 1949); *cf.* B.I.P.C. 20: 279.

These are more detailed descriptions than those given in the previous references; numerous illustrations are included. E.S.

WOOD TRANSPORTATION

PUTKISTO, KALLE. Recent developments in lumber transporta-

tion. Finnish Paper Timber J. 31, no. 21: 402-4, 406-7 (Nov. 15, 1949). [In Finnish]

An illustrated description of mechanized wood transportation is given, including trucks, tractors, and loading and unloading methods. E.S.

WOOL

CONSDEN, R. The structure of textile fibres. VI. The chemical structure of the wool fibre. J. Textile Inst. 40, no. 8: P814-30 (August, 1949); *cf.* B.I.P.C. 20: 81.

A popular account of the present knowledge of the chemical structure of the wool fiber is given. 9 figures. E.S.

YEAST

BRAUN, KARL. The age distribution of nutrient yeast. (*Torulopsis utilis*) in a continuously operated fermentor. Das Papier 3, no. 19/20: 380-2 (October, 1949). [In German]

No practical methods are known for the actual analysis of the age distribution of yeast cells in a continuously operated fermentor, but the age classification can be expressed mathematically. The number of yeast cells of a particular age group remaining in the fermentor is shown to decrease in accordance with an exponential function in the same manner as for a first-order reaction. Basic data are derived with the use of two related equations: $a = a_0 \cdot e^{-kt}$ (1); $a = a_0 \cdot e^{-\frac{t}{t_v}}$ (2). These equations are used in constructing two diagrams, of which the first (1) allows the determination of the fraction of a particular age group remaining in the fermentor at any particular time, and also permits the calculation of the percentage of that particular age group in the total yeast population. The other diagram (2) expresses the content of yeast of less than a particular age as a percentage of the total yeast population of the fermentor. 2 diagrams. A.J.W.

Patent Section

Although the abstracts of the United States patents are prepared from the patents themselves, the initial selection of the patents to be abstracted is made from the Patent Gazette *and, therefore, it is possible that the patent section will not contain all patents of potential interest to the industry. The abstracts of the Canadian patents are prepared from the claims published in the* Canadian Patent Office Record. *In so far as possible, an attempt will be made to indicate patents issued in both countries.*

The patent abstracts are listed under the various headings currently used for the abstracts of periodical articles.

Printed copies of United States patents can be obtained from the Commissioner of Patents, Washington, D.C.; the price is 25 cents per copy. Canadian patents up to and including December, 1948, are available only as manuscripts or photostatic copies and an estimate of the cost of a patent should be obtained from the Commissioner of Patents, Ottawa, Canada, in advance of the order. With January, 1949, printed copies of Canadian patents are available at 25 cents per copy of less than 50 sheets of printed matter. For patents of 50 sheets or over, the price is $1.00 per copy. Until the printing branch is in full operation and up to date, the printing of specifications will be several months behind.

ADHESIVES

WOOSTER, LEONARD C., and GARDINER, EARL E. Adhesive composition for paper. U. S. patent 2,489,170. Filed March 7, 1944. Issued Nov. 22, 1949. 16 claims. Assigned to Stancal Asphalt & Bitumuls Company. [Cl. 154-45.9]

An adhesive for use in forming multi-ply paperboard has the following composition: acid dextrin starch, 17%; water, 45%; a water-soluble urea-formaldehyde resin, 1.7%; ammonium chloride, 0.2%; and asphalt emulsion, 36.1%. E.G.S.

BARKERS AND BARKING

ROBERTS, JOHN R. Apparatus for stripping bark from step-by-step advanced sawmill edgings or slabs. U. S. patent 2,492,321. Filed Sept. 18, 1947. Issued Dec. 27, 1949. 14 claims. [Cl. 144-208]

Means are provided for the automatic advance of a slab which is to be debarked; the debarking chisels, knives, or teeth are automatically applied and removed when the slab is moved into the proper position. E.G.S.

SHAW, ERNEST C. Log debarking machine. U. S. patent 2,490,165. Filed April 17, 1944. Issued Dec. 6, 1949. 3 claims. Assigned to Allis-Chalmers Manufacturing Company. [Cl. 144-208]

A hydraulic barker is provided with log-transferring, -debarking, and -cleansing mechanisms; this invention embodies improvements of the features of U. S. patent 2,338,136, issued Jan. 4, 1944. E.G.S.

BLEACHING—GROUNDWOOD

K'BURG, PAUL B., and REICHERT, JOSEPH S. Bleaching wood pulp. U. S. patent 2,492,047. Filed March 30, 1946. Issued Dec. 20, 1949. 3 claims. Assigned to E. I. du Pont de Nemours & Company, Inc. [Cl. 8-104]

This corresponds to Canadian patent 458,400; *cf.* B.I.P.C. 19: 886. E.G.S.

BOARD

MAY, GEORGE. Structural element made from paper and like sheets. Canadian patent 461,600. Filed March 28, 1946. Issued Dec. 6, 1949. 10 claims. Assigned to Dufay-Chromex Limited.

This is the same as U. S. patent 2,428,979; *cf.* B.I.P.C. 18: 207. E.G.S.

MUENCH, CARL G. Composite wall panel. U. S. patent 2,489,922. Filed June 30, 1944. Issued Nov. 29, 1949. 3 claims. Assigned to The Celotex Corporation. [Cl. 154-44]

A wall structure comprises a body of insulating material and an interior finishing layer of hardened plastic building material; the finishing layer includes a gypsum core, to both surfaces of which are secured paper liners; the outer surface or plies of the liner are sized to render them water-resistant, and the inner surfaces or plies are either unsized or lightly sized, so that a satisfactory bond is obtained between the liners and the gypsum. E.G.S.

MUNTERS, CARL G. Heat insulation. Canadian patent 461,562. Filed Jan. 8, 1947. Issued Dec. 6, 1949. 4 claims.

This is the same as U. S. patent 2,417,435; *cf.* B.I.P.C. 17: 454. E.G.S.

SPENCE, OSWALD. Process of making hardboard and the like containing resin. Canadian patent 461,753. Filed Aug. 22, 1946. Issued Dec. 13, 1949. 22 claims. Assigned to Masonite Corporation.

A method of making hardboard comprises the steps of incorporating a partially condensed, water-insoluble furan resin into an aqueous suspension of hydrolyzed lignocellulose fiber so that the resinous material is taken up and retained by the fiber, removing the water of the suspension from the fiber-resin composite, and heating and pressing the composite material to secure self-bonding of the hydrolyzed lignocellulose fiber and to advance the condensation and cure of the resinous material. E.G.S.

BOARD SPECIALTIES

ARNESON, EDWIN L. Bottle carrier. U. S. patent 2,491,149. Filed Aug. 14, 1946. Issued Dec. 13, 1949. 4 claims. Assigned to Morris Paper Mills. [Cl. 224-45]

A glued paperboard or cardboard bottle carrier is provided with a handle which can be bent over to permit vertical stacking of a number of filled carriers. E.G.S.

COLGAN, WILLIAM G. Foldable decoy. U. S. patent 2,489,271. Filed Oct. 18, 1946. Issued Nov. 29, 1949. 8 claims. [Cl. 43-3]

A decoy made from a foldable blank is provided with sides and breast flaps extending across the front of the sides so as to hold the latter a predetermined distance apart. The breast of the decoy is sufficiently high to allow waves, wind, and tide to pass through the space between the sides of the decoy. E.G.S.

FINLEY, ALAN W. Tray. U. S. patent 2,491,554. Filed Oct. 1, 1946. Issued Dec. 20, 1949. 3 claims. [Cl. 229-30]

An advertising table piece embodies an ash tray and a vertical center member which represents a manufactured product, such as a bottle; a package of book matches may be attached to the center member. E.G.S.

FORTUNATO, VINCENT. Carrier for bottles or like articles. U. S. patent 2,491,039. Filed March 20, 1943. Issued Dec. 13, 1949. 10 claims. Assigned to Morris Paper Mills. [Cl. 224-45]

A cardboard bottle carrier is cut from a single rectangular blank. The weight of the bottles is wholly supported by the bottom and side walls of the carton, and retainer strips or bridge walls are located at the open ends of the carrier to prevent the accidental dropping of bottles. E.G.S.

HARWOOD, KENNETH J. Tampon applicator. Canadian patent 462,078. Filed Aug. 3, 1946. Issued Dec. 27, 1949. 2 claims. Assigned to International Cellucotton Products Company.

A tampon applicator is provided with an ejector tube which is split lengthwise to engage the end of a tampon. E.G.S.

KOHL, WILLIAM R., and IVERSON, ARDEN L. Necktie rack. U. S. patent 2,492,226. Filed Jan. 25, 1947. Issued Dec. 27, 1949. 10 claims. Assigned to Para-Lux Products Company. [Cl. 211-89]

A paperboard or cardboard necktie rack is provided with bendable supporting and locking tongues which hold the ties in place. E.G.S.

LANGAN, JOHN F. Film record card. Canadian patent 461,682. Filed June 6, 1946. Issued Dec. 6, 1949. 11 claims (?). Assigned to Wilmarth S. Lewis.

A record card for mounting microfilm consists of a card having an aperture, transparent adhesive material secured to one side around the edge of the aperture, and a temporary cover sheet on the opposite side of the card secured to the exposed portion of the adhesive; the cover sheet is removable for insertion of the film. E.G.S.

POLACSEK, MAURICE. Match splint. Canadian patent 461,981. Filed Dec. 7, 1948. Issued Dec. 27, 1949. 4 claims.

A package of book matches incorporates a card slit to provide single splints; the head of each splint has a V-shaped notch which forms a pocket for the ignition chemicals. E.G.S.

ROBINSON, JOSEPH J., JR. Tube closure. U. S. patent 2,491,213. Filed Nov. 15, 1946. Issued Dec. 13, 1949. 7 claims. Assigned to Marsh Wall Products, Inc. [Cl. 229-47]

A sheet metal plug or bung is provided which requires no nails or other

separate fastening means for securing it within a cardboard shipping or mailing tube. E.G.S.

RUTH, HOWARD M. Tampon applicator. U. S. patent 2,489,502. Filed July 18, 1946. Issued Nov. 29, 1949. 1 claim. Assigned to International Cellucotton Products Company. [Cl. 128-270; changed to 128-263]

A paperboard tampon applicator consists of an inner and outer tube; the inner tube is frictionally retained by raised points on the inner surface of the outer tube; the raised portions are produced by indenting the outer surface of the tube. E.G.S.

SAUNDERS, CHARLES R. Collapsible file drawer. Canadian patent 461,837. Filed Sept. 6, 1947. Issued Dec. 20, 1949. 3 claims.

A collapsible file drawer having foldable front, rear, and side walls is formed from an integral blank of nonmetallic material having parallel longitudinal scorings and parallel transverse scorings terminating in marginal slits. E.G.S.

SCHWARTZBERG, LOUIS. Egg crate flat. U. S. patent 2,490,326. Filed Dec. 2, 1948. Issued Dec. 6, 1949. 3 claims. [Cl. 217-26]

A pulp flat for an egg crate carries a number of rosettes, each formed with three protuberances equally spaced about a common center on opposite sides of the sheet forming the flat; the protuberances on one side of the sheet define a crater corresponding with the large end of the egg, and the projections on the other side define a crater slightly more acute than the small end of the egg. E.G.S.

SNYDER, JAMES E. Package. U. S. patent 2,491,423. Filed Sept. 20, 1947. Issued Dec. 13, 1949. 6 claims. Assigned to Wingfoot Corporation. [Cl. 99-171]

This is the same as Canadian patent 458,876; *cf.* B.I.P.C. 20: 54. E.G.S.

WILLIAMSON, CHARLES D. Advertising display card for trousers. U. S. patent 2,490,496. Filed Dec. 5, 1947. Issued Dec. 6, 1949. 2 claims. [Cl. 40-2]

An advertising display card may be attached to a pair of trousers without the use of a fastener; the card includes a body portion at the top of which is attached a horizontal finger element for insertion into a belt loop; one side of the body has a vertical finger for insertion into the side pocket of the trousers. The display card carries appropriate advertising, so positioned on the face of the card as to be adjacent to selected portions of the trousers when placed on the trousers. E.G.S.

CELLULOSE ESTERS

HINCKE, WILLIAM B., and RICHTER, GEORGE A. Activation of cellulose for acylation. U. S. patent 2,490,754. Filed Aug. 4, 1945. Issued Dec. 6, 1949. 3 claims. Assigned to Eastman Kodak Company. [Cl. 260-212]

Water is applied to a cellulose sheet until it has a moisture content of

35-65% (based on the wet sheet); the sheet is stored at 100-180° F. and 80-100% R.H. for 1-14 days and subsequently dewatered with butyric acid; the treated cellulose is susceptible to acylation. E.G.S.

CHLORINE DIOXIDE

DAY, GEORGE A., and FENN, EDWARD F. Process for producing chlorine dioxide. Canadian patent 461,586. Filed Nov. 26, 1946. Issued Dec. 6, 1949. 17 claims. Assigned to Brown Company.

This is the same as U. S. patent 2,484,402; *cf.* B.I.P.C. 20: 214. E.G.S.

HAMPEL, CLIFFORD A. Process for the production of perchlorates and chlorine dioxide. U. S. patent 2,489,572. Filed Feb. 13, 1946. Issued Nov. 29, 1949. 19 claims. Assigned to Cardox Corporation. [Cl. 23-85]

A mixture of 3 moles of sodium chlorate and 0.5 mole of potassium sulfate are treated in a generator with sufficient 85% sulfuric acid at 20-65° C. to totally decompose the chlorate. This operation forms 2 moles of chlorine dioxide, 1 mole of potassium perchlorate, and 1.5 moles of sodium sulfate. The chlorine dioxide formed in the generator is removed from the generator by the continuous passage of sufficient air to keep the chlorine dioxide concentration in the exit gases at about 30 mm. (mercury) partial pressure. The slurry from the generator, after all of the chlorate has been decomposed and the chlorine dioxide stripped off, is passed to the first filter where the solid potassium perchlorate and sodium sulfate are separated. These solids are treated in a washer with sufficient water to dissolve all of the sodium sulfate. Slurry from the washer, consisting of solid potassium perchlorate in a solution of sodium sulfate and sulfuric acid, is filtered in the second filter to separate the potassium perchlorate, which is dried to a solid product. Sufficient wash water is used in the filter to remove substantially all of the sodium sulfate and sulfuric acid adhering to the potassium perchlorate crystals, and this wash water is used in the washer to supply all or part of the water required there to dissolve the sodium sulfate. The filtrate from the filter is cooled in a crystallizer to precipitate sodium sulfate decahydrate, which is subsequently dried to form anhydrous sodium sulfate. Mother liquor from the crystallizer is concentrated in an evaporator along with the filtrate from the first filter to give a sulfuric acid solution which is sufficiently concentrated for re-use in the generator. Solids formed in this evaporation are fed to the washer for reworking. The concentrated sulfuric acid from the evaporator is re-used in the generator along with fresh acid for subsequent chlorate decomposition operations. The quantity of fresh acid needed in the generator is equivalent to two thirds of the sodium sulfate removed from the process in the drier. E.G.S.

HAMPEL, CLIFFORD A. Process for the production of perchlorates and chlorine dioxide. U. S. patent 2,489,574. Filed April 2, 1946. Issued Nov. 29, 1949. 7 claims. Assigned to Cardox Corporation. [Cl. 23-85]

A perchlorate and chlorine dioxide are produced by reacting sulfuric acid with a metallic chlorate (e.g., potassium, sodium, lithium, calcium, barium, strontium, or magnesium chlorate); without separation, the reaction products are combined with a salt whose metal is included above, but which is different from the metal of the chlorate; as a result, substantially all of one of the metals introduced appears as the perchlorate. The chlorate and salt are so

selected that no potassium is present when a perchlorate other than potassium chlorate is desired. E.G.S.

COMBINATION PACKAGES

HULTIN, OSCAR H. Package. U. S. patent 2,491,663. Filed Jan. 29, 1946. Issued Dec. 20, 1949. 6 claims. Assigned to Pneumatic Scale Corporation, Limited. [Cl. 229-37]

A carton is constructed so that bird seed can be packaged in the main body of the container, and a solid, rectangular bird biscuit can be placed in an end compartment. E.G.S.

DIELECTRICS

CALLINAN, THOMAS D. Asbestos product and method of preparation. Canadian patent 462,021. Filed Sept. 26, 1945. Issued Dec. 27, 1949. 3 claims. Assigned to Canadian General Electric Company, Limited.

The tensile strength of a fabricated, flexible, paperlike asbestos-bentonite sheet is increased by impregnating the sheet material with a magnesium chloride solution, following with an ammonia solution, drying the sheet, and heating at about 175° C. The resulting product has a higher density, dielectric strength, and tensile strength, and a lower power factor than the untreated material. E.G.S.

DIGESTERS

MCALEAR, JAMES M. Digester control. U. S. patent 2,490,533. Filed April 25, 1947. Issued Dec. 6, 1949. 15 claims. Assigned to Mason-Neilan Regulator Company. [Cl. 183-61]; Canadian patent 461,905. Filed April 10, 1948. Issued Dec. 20, 1949. 7 claims. Assigned to Mason-Neilan Regulator Company.

A gasoff and strainer-cleanout control mechanism incorporates pressure- and temperature-responsive elements of a differential controller which actuate a valve in the digester-relief line to bleed gases as required to maintain the digester temperature at the vapor-pressure temperature of the cooking liquor, regardless of the pressure in the digester. E.G.S.

DISINFECTION AND DISINFECTANTS

LEWIS, HARRY F., and PEARL, IRWIN A. 5-Hydroxymercurivanillin and methods of making the same. U. S. patent 2,489,380. Filed July 18, 1945. Issued Nov. 29, 1949. 4 claims. Assigned to Sulphite Products Corporation. [Cl. 260-434]

A disinfectant containing 5-hydroxymercurivanillin is produced by reacting a lignin substance (e.g., alkali lignin, kraft lignin, Scholler lignin, alkali black liquor, kraft black liquor, or basic calcium lignosulfonate) with a hot solution of sodium hydroxide and mercuric oxide. The disinfectant is adapted for such uses as: slime control on the wet end of paper machines and in white-water systems; disinfection of papermaking felts; control of the microorganisms that obstruct alum lines; prevention of deterioration of coatings, adhesives, and plasticizers; preservation of stored pulp lap; reduction of bacteria in paper and containerboard; production of mildewproof board and coated paper; cold water paints; protection of lumber and related products against sap stain and dry rot; mildewproofing textiles; and as a fungicide in the leather industry. E.G.S.

DISPENSING CONTAINERS

HEILBRONNER, FRANK S. Package for shirred pliable material. U. S. patent 2,489,490. Filed Dec. 6, 1946. Issued Nov. 29, 1949. 10 claims. Assigned to Transparent Package Company. [Cl. 206-56]

A package for decorative material in the form of shirred tubes of pliable material (e.g., cellophane) has an outlet end which is provided with a cardboard closure; the closure serves to flatten out the tubes in extended ribbon-like condition as they are withdrawn from the package. E.G.S.

HESS, JOSEPH J., and THATCHER, EDWARD E. Dispensing package. U. S. patent 2,490,732. Filed June 27, 1946. Issued Dec. 6, 1949. 4 claims. Assigned to E. C. Atkins and Company. [Cl. 206-16]

A cardboard container has an octagonal compartment which is adapted to receive a coil of band-saw blade, and has flat top and bottom walls to hold the coil in the compartment; an opening in the side of the container facilitates dispensing and recoiling of the blade material. E.G.S.

FOLDING BOXES

INMAN, WILLIAM H. Carton. U. S. patent 2,490,133. Filed Aug. 25, 1945. Issued Dec. 6, 1949. 8 claims. Assigned to Bloomer Bros. Company. [Cl. 229-51]

This is the same as Canadian patent 451,992; *cf.* B.I.P.C. 19: 215. E.G.S.

RINGLER, WILLIAM A. Seal-end carton. U. S. patent 2,491,278. Filed April 17, 1946. Issued Dec. 13, 1949. 3 claims. Assigned to The Gardner Board and Carton Co. [Cl. 229-38]

A seal-end carton is constructed in such a manner that the interior or first-folded flaps do not curl or warp under considerable resilient pressure; they are not bent inwardly by adhesive applicators or by the overlying flaps in the ultimate closure. E.G.S.

RODRIGUEZ, MANUEL G. Sealing means for cartons. U. S. patent 2,489,817. Filed April 17, 1947. Issued Nov. 29, 1949. 12 claims. [Cl. 229-45; changed to 229-29]

A sealing tape or string is inserted through the vertical partitions of a cellular egg carton in order to secure them to the body of the carton; thus, tampering with the contents is prevented. E.G.S.

SALERNO, GEORGE F. Packaged food product and packing method. U. S. patent 2,489,726. Filed Oct. 19, 1948. Issued Nov. 29, 1949. 4 claims. [Cl. 99-171]

A package for soda crackers and the like consists of an outer semirigid container and an inner preformed moistureproof bag with an opening at one end; the bag is longer than the stack of crackers, and its longer end is adapted to be folded over and to abut a closed end of the container, thus preventing the penetration of moist air. The container can be opened on one of its long sides on which the inner bag has no opening. E.G.S.

STONE, JEROME. Box. U. S. patent 2,490,557. Filed Nov. 17, 1944. Issued Dec. 6, 1949. 10 claims. [Cl. 229-52]

A cardboard garment box is provided with a handle which co-operates with keeper tabs on the box to latch the cover and bottom together. E.G.S.

INTERIOR PACKING

GOLDSTEIN, HARRY H. Paperboard or the like receptacle partition. U. S. patent 2,489,528. Filed Nov. 17, 1948. Issued Nov. 29, 1949. 5 claims. [Cl. 217-31]

A paperboard or cardboard partition structure is used with portable boxes or cases to form individual cells or compartments for bottles, jars, or the like. The strips comprising one set of partition members are wider than the other set; the cutout areas in the wider strips include pairs of co-operating locking tongues or flaps that are received in spaced slots in the narrower strips to secure the strips together at their intersections; the interlocked joints prevent displacement of the strips in the partition either when distended for use or when folded flat for shipping. E.G.S.

YARMAN, PAUL J. Bicycle package. U. S. patent 2,490,186. Filed May 28, 1947. Issued Dec. 6, 1949. 4 claims. Assigned to The Ohio Boxboard Company. [Cl. 206-46]

Corrugated board spacing and blocking members are provided for a bicycle shipping carton; a cradle member engages the front wheel of the bicycle, a longitudinal stop member engages the rear wheel, and a frame-engaging member is adapted for predetermined location with respect to the handle-bar post and seat post of the frame. E.G.S.

LIGNIN

KATZEN, RAPHAEL, and PEARLSTEIN, JOSEPH. Treating lignocellulosic materials and resulting product. U. S. patent 2,491,499. Filed Feb. 12, 1946. Issued Dec. 20, 1949. 10 claims. Assigned to Diamond Alkali Company. [Cl. 260-124]

Twenty-five grams of maple sawdust or chips are suspended in 200 ml. of dioxane in a glass flask equipped with a reflux condenser. While the suspension is maintained at or near the boiling point of dioxane, chlorine is passed in for one hour. The mixture is then filtered, and the residual crude cellulose is washed with additional dioxane and then with water. The dioxane fraction is then concentrated by evaporation and poured into several times its own volume of water to precipitate ethoxyl lignin chloride; the latter is then filtered, washed with water, and dried. Aqueous filtrates may be treated to recover additional dissolved carbohydrates and other reaction products which are formed in the above reaction and are not previously precipitated. E.G.S.

MACHINERY—CONVERTING MACHINERY

BARKER, WILLIAM J. Method of and means for forming and filling bags. U. S. patent 2,490,940. Filed Feb. 11, 1946. Issued Dec. 13, 1949. 14 claims. [Cl. 226-50]

A method is described for successively forming fabric or reinforced paper bags from a continuous length of preformed tubular material; the bags are cut from the tubular material and closed at the bottom. E.G.S.

HENNESSEY, RUSSELL J. Carton molding apparatus. U. S. patent 2,490,299. Filed Nov. 1, 1943. Issued Dec. 6, 1949. 12 claims. Assigned to Waldorf Paper Products Company. [Cl. 18-1]

A carton-sealing mechanism is adapted for molding siftproof carton corners. The cartons are successively moved between a series of rollers which engage the corners of the cartons; the rollers are urged inwardly under pressure so that the passage of cartons tends to force the rollers outwardly under spring tension. Since considerable force is required to urge the rollers outwardly, the corners contacted by the rollers are deformed in such a way that the material at the carton corners is formed or molded inwardly. E.G.S.

PUNTE, WILLIAM F. Method of and apparatus for forming paper end closures. U. S. patent 2,492,886. Filed June 30, 1944. Issued Dec. 27, 1949. 15 claims. Assigned to Continental Can Company, Inc. [Cl. 93-36]

A paper end closure includes a body portion which is adapted to fit into the end of a container, an annular wall at right angles to the body, and a skirt spaced from the wall to form a peripheral groove which will accept the end of the container wall. E.G.S.

SHAPIRO, ARTHUR, and HIRSCHEY, MALCOLM. Paper cup machine. U. S. patent 2,489,507. Filed Nov. 21, 1947. Issued Nov. 29, 1949. 10 claims. Assigned to Eagle Cone Corporation. [Cl. 93-60]

A paper cup machine has two or more groups of dies arranged in spaced angular relation around an axis; each pair of dies is moved relative to each other in a line parallel to the axis by a reciprocating crosshead which acts to open and close the dies. Several separate supplies of paper blanks are fed into the machine and several completed paper containers are simultaneously and continuously produced. E.G.S.

THOMPSON, DONALD C. Method and apparatus for forming tubes from sheet material. U. S. patent 2,490,930. Filed Aug. 28, 1946. Issued Dec. 13, 1949. 8 claims. Assigned to American Viscose Corporation. [Cl. 93-82; changed to 93-20]

Tubes are formed from paper, cellophane, or flexible plastic sheet material by overlapping the edges of a continuous sheet while introducing an adhesive substance between the overlapped edges, pressing the edges together, and passing the tube in an upwardly inclined path. As the tube moves upward, a floating flat disk rides within the tube and prevents adhesion between the overlapped joint and the opposite wall of the tube. E.G.S.

VON HOFE, GEORGE W. Label applying mechanism. U. S. patent 2,492,908. Filed March 22, 1947. Issued Dec. 27, 1949. 12 claims. Assigned to New Jersey Machine Corporation. [Cl. 216-55]

A labeling machine is adapted for the application of sheets coated with a thermoplastic adhesive; the mechanism includes a suction-transfer device which has a sheet-carrying surface, and a chamber connected to a source of suction. E.G.S.

MACHINERY—DECORTICATING MACHINE

REEVES, JOHN S. Decorticating machine. U. S. patent 2,490,157. Filed April 9, 1946. Issued Dec. 6, 1949. 10 claims. [Cl. 19-15]

A decorticating machine is particularly adapted for the production of fiber from the leaves of such plants as sansevieria, cabulla, maya, pita floja, and henequen, and from the stalks of ramie and the like. The machine comprises a pair of scutching wheels spaced apart in the direction of travel of the leaves, rotating in opposite directions, and located in coaxial relation to one another. The path of travel of the centers of the leaves, instead of being located at the level of the axes of the wheels, is in a horizontal plane extending over the tops of the wheels, and each wheel rotates outwardly and downwardly under one end of the leaf and away from its center in a curved path. Arcuate scutching plates are then inverted over the upper portions of the wheels, extending away from the center line of the machine in opposite directions corresponding with the directions of rotation of the wheels.

E.G.S.

MACHINERY—FOLDING MACHINE

MCBETH, FREEMAN M. Folding apparatus. U. S. patent 2,490,697. Filed April 28, 1945. Issued Dec. 6, 1949. 2 claims. Assigned to Macbeth Engineering Corporation. [Cl. 93-2]

A mechanism is especially adapted for folding and closing the open ends of paper bags or cartons when containing merchandise or other commodities.

E.G.S.

MACHINERY—JORDANS

DRAPER, RALPH L. Jordan engine construction. Canadian patent 461,860. Filed June 16, 1948. Issued Dec. 20, 1949. 10 claims. Assigned to John W. Bolton & Sons, Inc.

A jordan plug is provided with multiple-part, keystone-shaped separating members for insertion between the knives. E.G.S.

MACHINERY—PACKAGING MACHINERY

BURBANK, WENDELL T. Method of wrapping and labelling receptacle. Canadian patent 461,934. Filed May 1, 1948. Issued Dec. 20, 1949. 14 claims. Assigned to Sutherland Paper Company.

A method is described for wrapping and labeling groups of nested receptacles (e.g., paper cups) having inset bottoms with heat-sealable wrapping material. E.G.S.

GILBERT, JOSEPH A. Wrapping machinery. U. S. patent 2,492,567. Filed Oct. 4, 1946. Issued Dec. 27, 1949. 14 claims. Assigned to Rose Brothers (Gainsborough) Limited. [Cl. 93-2]

Machinery is provided for wrapping rectangular articles such as cigarette packages with a wrapper of paper, foil, film, or other material. The wrapper is folded around the article in the form of a tube, with the opposed marginal portions of the wrapper lying face to face in the form of an upstanding longitudinal seam which is subsequently sealed and folded onto the article; the portions of the tube extending beyond the ends of the article are sealed and collapsed so as to form lateral seams along the ends of the package.

E.G.S.

MACHINERY—PRESSES

VICK, EDWARD H. Press for sheet or slab material. Canadian patent 461,590. Filed July 4, 1947. Issued Dec. 6, 1949. 4 claims. Assigned to E. A. Chamberlain Limited.

A press for extracting moisture from a sheet of wet felted fibrous material consists of relatively reciprocable upper and lower platens, each having an operative surface adjacent to the co-operating platen; drainage canals formed in the lower platen and covered by a foraminous element which constitutes the operative surface of the platen; and an endless belt conveyor of moisture-permeable material associated with the lower platen and mounted with its operative run extending through the press over the operative surface of the lower platen. E.G.S.

MACHINERY—SLITTERS AND WINDERS

ROY, LEO. Guide for paper rolling machines. U. S. patent 2,492,713. Filed Feb. 8, 1946. Issued Dec. 27, 1949. 2 claims. [Cl. 242-65]

A guide mechanism serves to prevent coning of a paper roll during the winding operation. E.G.S.

MACHINERY—SUCTION ROLLS

HORNBOSTEL, LLOYD. Suction roll seal assembly. Canadian patent 461,584. Filed May 12, 1948. Issued Dec. 6, 1949. 9 claims. Assigned to Beloit Iron Works.

A suction-roll seal assembly comprises a suction gland adapted for mounting in a suction roll and having a well extending along its length, a relatively rigid sealing strip mounted in the well, and an inflated resilient tube in the bottom of the well which acts to force the strip from the well. E.G.S.

MATERIALS HANDLING

GREENE, ROBERT H. Mount for web rolls. U. S. patent 2,490,685. Filed Nov. 8, 1946. Issued Dec. 6, 1949. 6 claims. [Cl. 242-58]

A mount for web rolls is particularly adapted for elevating and supporting heavy web rolls in selected positions to be unwound and fed to a processing machine. E.G.S.

SCHNADT, ELMER. Log lifting jack. U. S. patent 2,492,597. Filed July 12, 1948. Issued Dec. 27, 1949. 3 claims. [Cl. 254-135]

A log-lifting jack embodies means for engaging and raising one end of a log while it is being sawed, thus preventing the binding of the saw in the cut. E.G.S.

MOLDED PULP ARTICLES

HARRIS, RAYMOND R. Resin impregnated pulp preforms and process of catalyzing same. Canadian patent 462,004. Filed June 23, 1948. Issued Dec. 27, 1949. 12 claims. Assigned to American Cyanamid Company.

A polyester-impregnated pulp preform is catalyzed by spraying its surface with a solution of acetyl peroxide in a phthalic ester which is copolymeriz-

able with the polyester resin; the quantity of peroxide catalyst applied is 0.2-4.0%, based on the weight of resin in the preform. E.G.S.

PALESE, RICHARD A. M., and YOUNG, SERENUS H. A. Pulp preforms and articles obtained therefrom. Canadian patent 462,003. Filed May 14, 1948. Issued Dec. 27, 1949. 10 claims. Assigned to American Cyanamid Company.

A process for making pulp preforms consists of preparing a slurry of fibers, adding a melamine-formaldehyde resin to the slurry, collecting the fibers and resin on a mold, drying the molded fibers and resin, impregnating with an unsaturated polyester resin, and curing the polyester resin. E.G.S.

MUCILAGE

SWANSON, JOHN W. Mucilaginous material. Canadian patent 461,617. Filed Dec. 19, 1945. Issued Dec. 6, 1949. 10 claims. Assigned to The Institute of Paper Chemistry.

This is the same as U. S. patent 2,444,412; *cf.* B.I.P.C. 18: 883. E.G.S.

PAPER—COATED

JOHNSON, STANLEY J. Water-borne aluminum coatings on paper. U. S. patent 2,491,113. Filed Jan. 14, 1946. Issued Dec. 13, 1949. 3 claims. Assigned to S. D. Warren Company. [Cl. 260-6]

A paper coating composition comprises finely divided aluminum, casein, urea, sodium pyrophosphate, and 5-20% dimethylolurea (based on the dry weight of the casein). E.G.S.

SERMATTEI, JOHN P. Moistureproof heat sealing composition. U. S. patent 2,490,550. Filed Aug. 13, 1947. Issued Dec. 6, 1949. 15 claims. Assigned to E. I. du Pont de Nemours & Company. [Cl. 260-28.5]

A glassine paper is rendered heat-sealable and moistureproof by an adherent film of the following composition (percentage by weight): ethylene-vinyl acetate copolymer (3:1), 12.2%; phenol-formaldehyde modified rosin (m.p. 172-180° C.), 19.3%; refined paraffin (m.p. 60-64° C.), 3.5%; and a suitable solvent such as toluene, 65%. E.G.S.

PAPER—PERMANENCE

STUDENY, JOHN, POLLARD, JOHN D., and LANDES, CHESTER G. Permanent paper and method of making same. U. S. patent 2,492,821. Filed Sept. 28, 1948. Issued Dec. 27, 1949. 5 claims. Assigned to American Cyanamid Company. [Cl. 117-154; changed to 117-152]

The stability of a paper against aging is improved by impregnating the paper with an aqueous solution of sodium, potassium, or ammonium dicyanimide, and subsequently drying the paper to retain 0.3-10% of the compound. E.G.S.

STUDENY, JOHN, POLLARD, JOHN D., and LANDES, CHESTER G.

Permanent paper and method of making same. U. S. patent 2,492,822. Filed Sept. 28, 1948. Issued Dec. 27, 1949. 5 claims. Assigned to American Cyanamid Company. [Cl. 117-154; changed to 117-152]

The permanence of a paper is improved by impregnating with an aqueous solution of sodium, potassium, or ammonium dicyanoguanidine, and drying the paper to retain 0.3-10% of the impregnating agent. E.G.S.

PAPER SIZING

NEUBERT, WILLI, KRZIKALLA, HANS, and ARMBRUSTER, RICHARD. Process of sizing paper and product. U. S. patent 2,492,702. Filed June 16, 1939. Issued Dec. 27, 1949. 6 claims. Assigned to General Aniline & Film Corporation. [Cl. 92-21]

An addition of 0.5% of saponified rosin is made in the hollander. In order to precipitate the rosin size, there are then added 2% of aluminum sulfate (solid or solution) and 0.5% of a condensation product of one mole of ammonium chloride, two to three moles of formaldehyde, and one mole of acetaldehyde (prepared according to U. S. patent 2,296,211, issued Sept. 15, 1942). Before or after sizing, 0.1% of a naphthalenesulfonic acid-formaldehyde condensation product (based on the dry pulp) may be added. E.G.S.

PAPER SPECIALTIES

ANDREA, RALPH E. Photoflash lamp. U. S. patent 2,490,769. Filed Jan. 2, 1947. Issued Dec. 13, 1949. 7 claims. [Cl. 67-31]

A dry paper sleeve is slipped over the leadin wires of a foil- or wire-filled photoflash lamp during the manufacturing process, thus insulating the filament and primer from any electrical charge which may be present on the foil or wire. E.G.S.

ANDREWS, DAVID B. Package and packaging material therefor. Canadian patent 461,752. Filed March 10, 1949. Issued Dec. 13, 1949. 6 claims. Assigned to Marathon Corporation.

This is the same as U. S. patent 2,467,875; *cf.* B.I.P.C. 19: 674. E.G.S.

ANDREWS, PRESTON L. Phonograph record album. U. S. patent 2,492,026. Filed Feb. 26, 1947. Issued Dec. 20, 1949. 2 claims. [Cl. 129-20]

Heavy paper phonograph record envelopes are constructed so as to provide an open hinging fold or loop portion at the edge which is to be anchored in an album. E.G.S.

BONINI, JOHN H. Package. Canadian patent 461,751. Filed March 3, 1949. Issued Dec. 13, 1949. 1 claim. Assigned to Marathon Corporation.

This is the same as U. S. patent 2,465,841; *cf.* B.I.P.C. 19: 674. E.G.S.

CALLANAN, NEIL D. Bank cheque. Canadian patent 461,964. Filed Dec. 17, 1947. Issued Dec. 27, 1949. 4 claims.

A two-part check is made of paper and cardboard; the paper portion bears a check form, and the cardboard section is adapted for feeding to a sorting or tabulating machine. E.G.S.

CLARK, FRANK M. Electric capacitor. Canadian patent 462,023. Filed Oct. 24, 1945. Issued Dec. 27, 1949. 2 claims. Assigned to Canadian General Electric Company, Limited.

An electric capacitor adapted for operation at about 100° C. consists of metal foil strips and an interposed spacer of paper strips; the foil and paper are coiled in the form of a roll and impregnated with diallyl phthalate resin. The capacitor has an average life of 2000 hours when operated at 1000 volts (d.c.) per mil of dielectric at an ambient temperature of 100° C. E.G.S.

CLARKE, ELLA M. Disposable bag with means for fastening same temporarily to user. U. S. patent 2,491,799. Filed Jan. 9, 1948. Issued Dec. 20, 1949. 3 claims. [Cl. 128-283]

An acid- or waterproof paper receptacle serves as a disposable bedpan. E.G.S.

CLOUD, WILLIAM S. Stretching and laminating thermoplastic sheet material with other sheet material. U. S. patent 2,490,946. Filed April 3, 1947. Issued Dec. 13, 1949. 10 claims. [Cl. 154-124; changed to 154-37]

A sheet of organic plastic material, such as Pliofilm, is stretched in two directions and laminated to another sheet of paper or foil; the resulting structure offers resistance to tear in more than one direction. E.G.S.

DAVIDSON, WILLIAM W. Printing plate. U. S. patent 2,491,090. Filed March 1, 1946. Issued Dec. 13, 1949. 13 claims. Assigned to Davidson Manufacturing Corporation. [Cl. 101-415.1; changed to 101-149.2]

A thin, flexible paper-base planographic printing plate is formed in such a manner that wrinkling or buckling of the plate on the press under the influence of lithographic fluids is prevented. E.G.S.

FARRELL, ROBERT A., and WAGNER, CHARLEY L. Heat-sealable sheet material. Canadian patent 461,904. Filed Dec. 6, 1944. Issued Dec. 20, 1949. 10 claims. Assigned to Marathon Corporation.

This is the same as U. S. patent 2,474,619; *cf.* B.I.P.C. 19: 896. E.G.S.

FREEDMAN, BENJAMIN H. Ticket strip and ticket. U. S. patent 2,491,807. Filed May 25, 1945. Issued Dec. 20, 1949. 1 claim. [Cl. 283-53]

A theater-ticket strip for use in a ticket-dispensing machine has rectangular oblong openings which are engaged by feed pins in the machine when a ticket is discharged. E.G.S.

IRMSCHER, HANS O. Method of making an infusion package with a nontangling handle and tag. U. S. patent 2,490,057. Filed May 25, 1946. Issued Dec. 6, 1949. 4 claims. Assigned to National Urn Bag Co., Inc. [Cl. 93-2]

A tea or coffee bag is provided with pressure heat-sealed joint seams; the bag is formed with integral means for retaining the string handle and tag temporarily to the bag portion of the package to eliminate tangling. E.G.S.

KESTNER, FRED O., and MCFALL, WILLIAM W. Garment hanger shield. U. S. patent 2,491,896. Filed Feb. 14, 1948. Issued Dec. 20, 1949. 1 claim. Assigned to Package Masters, Inc. [Cl. 223-98]

A paper shield for a wire clothes hanger is provided with zones of a pressure-sensitive, latex-type adhesive; flap portions of the shield are folded over the wire hanger and adhered to the body portion to prevent slipping on the hanger. E.G.S.

ORCHARD, HERMAN C. Carrier bag. U. S. patent 2,491,929. Filed April 27, 1946. Issued Dec. 20, 1949. 3 claims. Assigned to Orchard Paper Company. [Cl. 229-54; changed to 229-68]

A paper shopping bag is provided with a flexible cord handle; the load is distributed over a large area of the flap of the bag by rows of stitching extending laterally across the flap and through the cord handle. E.G.S.

SMITH, HELEN E. Disposable bib. U. S. patent 2,492,599. Filed April 25, 1946. Issued Dec. 27, 1949. 2 claims. [Cl. 2-49]

A disposable paper bib consists of three sheets crimped together to form a unit; the lower sheet is water-resistant, and the two upper sheets are absorbent. No safety pins or other fasteners are required. E.G.S.

SUGAR, AARON. Greeting card and envelope assembly. U. S. patent 2,491,227. Filed Feb. 20, 1947. Issued Dec. 13, 1949. 2 claims. [Cl. 229-70; changed to 229-68]

A combined greeting card and envelope assembly incorporates a price-marking tab on the envelope; the tab is readily removed from the envelope flap without defacing the card or envelope. E.G.S.

PLASTICS

MEILER, JOHN G. Manufacture of plastic products from wood (sulfur cook process). U. S. patent 2,490,078. Filed April 12, 1946. Issued Dec. 6, 1949. 12 claims. Assigned to Diamond Alkali Company. [Cl. 106-123]

A moldable composition is produced by digesting lignocellulose under pressure at 150-250° C. with a mixture of kraft black liquor containing 3-6% of added elemental sulfur by weight; the amount of the mixture and the digestion time are such as to provide a final pH of 7.5-9.5. The resulting product retains most of the original lignin in the wood and includes additional lignin precipitated from the alkaline solution if an alkali solution containing lignin is used in treating the wood. E.G.S.

SPEIGHT, FRANK Y., JR. Process for impregnating fibrous materials and products thereof. U. S. patent 2,489,985. Filed Dec. 4, 1944. Issued Nov. 29, 1949. 2 claims. Assigned to American Cyanamid Company. [Cl. 206-59]

Glass cloth is impregnated with a molten bonding material containing a

volatile reactive component, and wound onto a roll together with a relatively impervious cover sheet (e.g., cellophane, glassine paper, waxed paper, or Holland cloth); the glass cloth may be heated prior to the application of the bonding material to remove substances which would prevent good impregnation. E.G.S.

PLASTICS—PAPER-BASE

READ, HAROLD E. Molding material. U. S. patent 2,489,541. Filed Jan. 3, 1946. Issued Nov. 29, 1949. 3 claims. Assigned to Continental Can Company. [Cl. 154-46]

A laminated molding material comprises a fibrous sheet having a plurality of slits and stretched so as to have a flexible open mesh structure, and unbroken surface sheets secured to the first sheet; the surface sheets are impregnated with a phenol-formaldehyde resin and are interlocked through the mesh of the first-mentioned sheet. E.G.S.

PREHYDROLYSIS

ULLMANN, GUSTAV. Process for the production of cellulose pulp and other substances. Canadian patent 461,954. Filed April 3, 1945. Issued Dec. 20, 1949. 1 claim. Assigned one half to English Cellulose Derivatives Limited.

Pulp is produced from raw cellulosic vegetable materials by pretreatment of the raw material with a dilute solution of a suitable acid or acid salt and subsequent digestion of the pretreated material with the alkaline effluent from an alkaline pulping process. E.G.S.

PULP

NUESSLE, ALBERT C., and HALL, WILLIAM P. Dispersion of wood pulp. Canadian patent 462,008. Filed Feb. 28, 1947. Issued Dec. 27, 1949. 10 claims. Assigned to Joseph Bancroft & Sons Co.

Closely packed cellulosic fibers are dispersed by treating the pulp with ammonium dihydrogen phosphate or sulfuric acid in the presence of urea, drying the pulp, and baking the dried pulp for 1-180 minutes at 250-400° F. E.G.S.

ROOFING FELTS

MCMILLAN, WALLACE A. Impregnation of absorbent material. Canadian patent 462,129. Filed Dec. 12, 1944. Issued Dec. 27, 1949. 2 claims. Assigned to Texaco Development Corporation.

A roofing felt is impregnated with an asphalt composition containing 0.05-10 p.p.m. of a dimethylsilicone polymer; the polymer eliminates foaming of the asphalt bath during the impregnating operation. E.G.S.

SEMI-CHEMICAL PULPING PROCESS

KEHOE, RICHARD D. Treatment of ligno-cellulose. Canadian patent 462,096. Filed Nov. 5, 1947. Issued Dec. 27, 1949. 5 claims. Assigned to Paper and Industrial Appliances, Inc.

A modification of the Asplund process consists of feeding lignocellulosic material to a closed vessel, subjecting the material to superatmospheric pressure at a lignin-softening temperature, and fiberizing the vapor-treated material after removal from the vessel. E.G.S.

SHIPPING CONTAINERS

ANDERSON, WILBUR G., JR. Folding paper box. U. S. patent 2,492,454. Filed Nov. 17, 1947. Issued Dec. 27, 1949. 5 claims. Assigned to American Box Board Company. [Cl. 229-37; changed to 229-36]

A folding paper box is designed for the shipment of dressed poultry, particularly turkeys. E.G.S.

MEYERHOEFER, CARL E. Container. U. S. patent 2,491,680. Filed March 15, 1947. Issued Dec. 20, 1949. 5 claims. Assigned to Lewyt Corporation. [Cl. 206-16]

A corrugated board container is designed to house a vacuum cleaner and its accessories. E.G.S.

POTTS, ROY C. Collapsible shipping case. U. S. patent 2,491,206. Filed April 26, 1944. Issued Dec. 13, 1949. 16 claims. [Cl. 229-23]

A multicompartment corrugated or solid fiberboard (45-80 points) shipping case is provided with support for its top and bottom closure flaps. The size of the blanks may be reduced as the over-all size of the case increases. E.G.S.

PRIEST, CLAYTON W. Metal end closure for waxed paper container bodies. U. S. patent 2,492,500. Filed April 14, 1947. Issued Dec. 27, 1949. 7 claims. Assigned to Continental Can Company, Inc. [Cl. 229-5.5]

This is the same as Canadian patent 457,228; *cf.* B.I.P.C. 19: 827. E.G.S.

RINGLER, WILLIAM A. Tubular carton with strong end closures. U. S. patent 2,492,712. Filed July 3, 1946. Issued Dec. 27, 1949. 4 claims. Assigned to Gardner Board and Carton Co. [Cl. 229-39]

A mailing carton is provided with a closure which is not subject to accidental opening as the result of handling, the weight of the contents, or catching on external objects. E.G.S.

SHIPPING CONTAINERS—FROZEN FOODS

BELL, JOHN G. Container and blank therefor. Canadian patent 461,909. Filed Oct. 16, 1946. Issued Dec. 20, 1949. 8 claims. Assigned to Morris Paper Mills.

This is the same as U. S. patent 2,457,198; *cf.* B.I.P.C. 19: 452. E.G.S.

BUTTERY, KENNETH T. Container. U. S. patent 2,489,616. Filed Aug. 2, 1946. Issued Nov. 29, 1949. 6 claims. Assigned to Sutherland Paper Company. [Cl. 229-5.5]

A cylindrical containerboard carton is adapted for use in packaging and freezing food products such as fruits; a depressor member in the lid serves to hold the fruit wholly submerged in the packing sirup or liquid. E.G.S.

SHIPPING CONTAINERS—MULTIWALL BAGS

JOHNSSON, JOHN. Method and a device for closing and sealing of

valves in valve bags. Canadian patent 461,858. Filed March 1, 1948. Issued Dec. 20, 1949. 5 claims. Assigned to Billeruds Aktiebolag.

A valve bag is provided with a flexible sleeve which extends from the interior of the bag through the valve to a short distance outside the valve opening; a narrow metal strip extends across the sleeve over the top wall of the projecting outer end of the sleeve. The sleeve is closed by bending the metal strip upon itself with the projecting outer end of the sleeve folded and clamped between the halves of the strip. E.G.S.

JOHNSSON, JOHN. Valve bag. U. S. patent 2,490,966. Filed March 20, 1946. Issued Dec. 13, 1949. 4 claims. Assigned to Billeruds Aktiebolag. [Cl. 229-62.5]

This corresponds to Canadian patent 442,191; *cf.* B.I.P.C. 17: 675. E.G.S.

SULFITE WASTE LIQUOR

BARNES, WILLIAM E. Drilling mud. U. S. patent 2,491,436. Filed July 11, 1947. Issued Dec. 13, 1949. 17 claims. Assigned to Sun Oil Company. [Cl. 252-8.5]

An aqueous drilling mud comprises calcium bentonite dissolved in water and 1-10 pounds per barrel of calcium lignosulfonate as a viscosity-reducing material. E.G.S.

GREWIN, FREDRIK W., and LINDBERG, STEN G. Method of removing scale. U. S. patent 2,490,750. Filed Sept. 15, 1942. Issued Dec. 6, 1949. 5 claims. Assigned to Rosenblad Corporation. [Cl. 159-47]

In concentrating sulfite waste liquor in a multiple-effect evaporator, the paths of the heating medium and the heated liquor are interchanged at intervals, so that the passage conducting liquor during one period will be conducting the heating medium during a following period. E.G.S.

PERKINS, HOLLOWAY W. Drilling mud. U. S. patent 2,491,437. Filed Aug. 3, 1948. Issued Dec. 13, 1949. 6 claims. Assigned to Sun Oil Company. [Cl. 252-8.5]

An aqueous drilling mud comprises a hydratable alkaline earth-metal clay (e.g., calcium bentonite), 1-10 pounds per barrel of calcium lignosulfonate, and 0.75-3 pounds per barrel of quebracho. Quebracho prevents excessive increase in viscosity and gelation when the drilling mud is permitted to stand quiescent under well conditions. E.G.S.

SALVESEN, JORGEN R., HARMON, CARLYLE, and BROWNING, WILLIAM C. Lignin dispersing agents and method of making same. U. S. patent 2,491,832. Filed Sept. 23, 1946. Issued Dec. 20, 1949. 9 claims. Assigned to Marathon Corporation. [Cl. 260-124]

A partially desulfonated lignosulfonate dispersing agent is produced by heating sulfite waste liquor and caustic under pressure at 140-170° C., continuously introducing air into the liquor until the causticity is reduced to a pH of 10.5 to 11 and virtually all the dissolved calcium salts are precipitated by reaction with the oxidation products (i.e., carbon dioxide, oxalic acid, etc.), removing the insoluble calcium salts by filtration, acidifying the filtrate to precipitate partially desulfonated hydrolyzed lignosulfonate com-

pounds, washing the precipitate to remove inorganic sulfates and other salts, dissolving the washed product in caustic soda solution until the solution has a pH of 5 to 9, and drying to a dark brown, nonhygroscopic powder in a drum or spray drier. E.G.S.

TYDÉN, ARNOLD E. Method of cleaning scale. U. S. patent 2,490,759. Filed Oct. 6, 1943. Issued Dec. 6, 1949. 3 claims. Assigned to Rosenblad Corporation. [Cl. 159-23]

A process is described for removing scale from the heat-transfer surfaces of heat exchangers used to evaporate sulfite waste liquor. The hot scale-removing fluid and the heated liquor are caused to change paths with each other at intervals in the heat exchanger, so that the heating medium is utilized for cleaning purposes. As the scale-removing medium leaves the exchanger, it is reheated, replenished with fresh chemicals, and passed back to the exchanger. It is recommended that a sulfurous acid solution or sulfur dioxide-containing vapor, together with a solution of sodium hexametaphosphate, be used as the heating and scale-removing medium. E.G.S.

TRANSPARENT CONTAINERS

BUTCHER, CHARLES E. Folding box. U. S. patent 2,490,779. Filed June 2, 1947. Issued Dec. 13, 1949. 3 claims. Assigned to Transparent Boxes, Inc. [Cl. 206-45.34]

A foldable transparent display container which can be stored and shipped flat is adapted for the packaging of flowers, jewelry, and the like. E.G.S.

WET STRENGTH

DANIEL, JOHN H., JR., HASTINGS, RANDALL, WILSON, LUCIUS H., and LANDES, CHESTER G. Application of dispersed material to cellulosic fibres. Canadian patent 461,850. Filed May 17, 1948. Issued Dec. 20, 1949. 5 claims. Assigned to American Cyanamid Company.

A method of impregnating pulp with large quantities (i.e., 50-100% of its weight) of an organic impregnating agent while preserving its freeness and felting properties comprises preparing an aqueous pulp suspension of 0.5-6% consistency; adding 1-15% (based on the weight of the pulp) of a partially polymerized, hydrophilic, cationic, urea-formaldehyde, polyfunctional, organic, nitrogen-base resin; allowing the suspension to stand in a nonalkaline condition for at least 30 minutes; adding the requisite quantities of an aqueous dispersion containing the organic impregnating agent in deflocculated condition; and flocculating the impregnating agent in the presence of the suspended pulp fibers by the action of the resin, thus depositing large quantities of the impregnating agent on the fibers. E.G.S.

DUDLEY, JAMES R., and ANTHES, JOHN A. Polyarylbiguanide-urea resin in wet strength paper. Canadian patent 461,847. Filed Feb. 12, 1948. Issued Dec. 20, 1949. 12 claims. Assigned to American Cyanamid Company.

A wet-strength paper is produced by the incorporation of a resinous composition consisting of the product of reaction between a urea-formaldehyde resin and the water-soluble product of reaction between dicyanodiamide, formaldehyde, and an alkyl aniline. E.G.S.

MAXWELL, CHARLES S., and LANDES, CHESTER G. Manufacture of wet strength paper. Canadian patent 461,848. Filed Feb. 27, 1948. Issued Dec. 20, 1949. 11 claims. Assigned to American Cyanamid Company.

A wet-strength paper is produced by preparing a pulp suspension containing about 50-150 p.p.m. of dissolved sulfate ion, adding a colloidal solution of cationic melamine-aldehyde resin, adsorbing large quantities of the resin on the pulp fibers, and forming the fibers into a felted product; the resin is cured as the paper passes through the drier. E.G.S.

REYNOLDS, WALTER F., JR. Production of absorbent cellulosic product. Canadian patent 461,849. Filed May 4, 1948. Issued Dec. 20, 1949. 16 claims. Assigned to American Cyanamid Company.

A wet-strength paper is obtained by adding 1-5% of a thermosetting resin having substantive properties for cellulose and 0.01-1% of an ethylene oxide-octadecylamine condensation product to the pulp suspension, adsorbing the thermosetting resin and condensation product on the pulp fibers, forming the fibers into a paper sheet, and heating the sheet to cure the resin to a water-insoluble condition. E.G.S.

WHITE WATER

METCALFE, WILLIAM K. Liquid heating. Canadian patent 462,115. Filed July 30, 1947. Issued Dec. 27, 1949. 2 claims. Assigned to J. O. Ross Engineering Corporation.

A method of heating white water comprises passing a stream of exhaust vapors from a papermaking machine through a chamber divided into a tank containing white water and a hopper having a bottom outlet, rotating a spray-producing device in the tank to project white water into the vapor stream, removing the heated white-water spray from the stream, and collecting the white water in the hopper. E.G.S.

WOOD OPERATIONS

BUDREAU, JOHN L. Skid loader. U. S. patent 2,491,030. Filed Nov. 28, 1947. Issued Dec. 13, 1949. 3 claims. Assigned to Minnesota and Ontario Paper Company. [Cl. 214-140; changed to 214-131]

A skid loader for handling logs is provided with pivotally mounted arms which may be advanced under the material to be loaded to raise the material from the ground; the V-shaped pivoted loading arms rotate so as to hold the logs together until the load is raised to the desired level and loaded into a truck or storage space. E.G.S.

WOOD TRANSPORTATION

ANDERSON, EDWARD J., LEHTO, EINO, and SAARI, MATT. Snatch block. U. S. patent 2,491,069. Filed May 12, 1947. Issued Dec. 13, 1949. 2 claims. Assigned to Marathon Corporation. [Cl. 254-194]

A snatch block is constructed of high-tensile strength steel. As tension increases on the drag cable during hauling operations, the hook portion locks more securely, so that accidental unlocking cannot occur. E.G.S.

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